THE UNIVERSITY OF ALBERTA

ACADEMIC ACHIEVEMENT OF PUPILS IN THE EDMONTON CONTINUOUS PROGRESS PLAN

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

EDMONTON, ALBERTA

APRIL, 1964

ABSTRACT

The purpose of this study was to assess and compare the academic achievement of pupils in the Continuous Progress Plan in the Edmonton Public School System with matched pupils who attended traditionally Graded classes. This comparison is possible because the Continuous Progress Plan has been introduced gradually, thereby providing a population of pupils whose schooling has been exclusively in the Continuous Progress Plan and at the same time retaining a population of pupils whose schooling has been exclusively in the traditionally Graded Plan.

Average pupils from the Continuous Progress Plan who had not been accelerated were randomly selected as an experimental sample. Two groups were chosen, one group had completed four years and the other five years of the elementary program. In addition to these two groups, accelerated pupils in the Continuous Progress Plan who had completed either five years of the elementary program in four years or six years of the program in five years, were also included in the study.

Pupils from the Continuous Progress Plan were matched with pupils in the Graded Plan. Each pair was matched within a range of five I.Q. points, was of the same sex, attended a

school of the same approximate socio-economic background and covered approximately the same content and course of studies.

The experimental and control groups were tested on the Iowa Tests of Basic Skills in vocabulary, reading comprehension, language skills and arithmetic skills and the Edmonton set of achievement tests in reading, arithmetic, science and social studies.

Statistical analysis of the test results indicated:

1. No difference between the two average groups in the Continuous Progress Plan and their respective controls in the Graded Plan.
2. That superior pupils in the fifth grade of the Graded Plan scored significantly higher on three tests but showed no significant difference in four others, when compared with superior pupils in the fourth year of the five-year program of the C.P.P.
3. That superior pupils in the sixth grade scored significantly higher in two tests but showed no significant difference in six others when compared with superior pupils in the fifth year of the five-year program of the C.P.P.

This study would indicate that the C.P.P. has produced no difference in academic achievement for average pupils. It

would also appear that superior pupils who have completed the C.P.P. in five years show little or no difference in academic achievement when compared with pupils who completed the Graded Plan in six, although there appears to be a greater difference in academic achievement between superior grade fives in the Graded Plan and their matched counterparts in the fourth year of the five-year program of the C.P.P.

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ACKNOWLEDGEMENTS

It is with much appreciation that the researcher acknowledges the help and advice of Mr. A.G. Bayly, Assistant Superintendent of Elementary Schools and Miss. A. Carmichael and Mr. D.E. Cooney, Elementary Supervisors.

Appreciation is also expressed to Dr. J.H.M. Andrews, Dr. S. Hunka and Dr. M.D. Jenkinson for constructive counsel and assistance.

CHAPTER I

INTRODUCTION

Various schemes of school organization in the United States and Canada have been developed in an attempt to break down graded structure.[1] These plans were designed to modify the weaknesses of the grade system and help pupils of varying abilities move ahead unhampered by uniform grade expectations.

This movement towards an ungraded structure has been stimulated by certain philosophical and psychological positions together with the results of recent educational experimentation. Goodlad and Anderson,[2] point out four of the outstanding influences:

1. Dewey's influence in viewing educational objectives in a broader perspective: concern for children's health, personality and social adjustment has been added to the long established intellectual and moral aspects of education.

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[1] R.C. Ritchie, "A Survey of Selected Nongraded Elementary School Programs in Canada and the United States" (unpublished Master's thesis, The University of Alberta, Edmonton, 1960).

[2] J.I. Goodlad and R.H. Anderson, The Nongraded Elementary School. (New York: Harcourt, Brace and Company, 1959) pp. 51-52.

2. Attention given to human development expressed by educators through intensive study of children revealing that children differ not only physically, emotionally and socially but also intellectually.

3. Research focused upon promotion and retention of pupils with a substantial body of evidence pointing to the negative effects of nonpromotion.

4. Newer theory pointing to the fact that content should be reorganized for the development of inductive and deductive thinking.

The emphasis on individual differences has not been without influence on educational practitioners. Trump,[1] echoes the opinions of most educators when he states:

> Both emotionally and scientifically most teachers and administrators react sympathetically to pleas for more attention to the difference among students.

Through the analysis of classes at several grade levels Goodlad and Anderson have discovered certain generalities regarding individual differences. They have found that there is a range of three to four years in readiness, that initial spread in abilities approximately doubles by the end of elementary school, that individual children's achievement patterns differ markedly from learning area to learning area and that range in intellectual readiness and in most areas of

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[1] J.L. Trump, "Basic Changes Needed to Serve Individuals Better", Educational Forum, 26:93-101, November, 1961.

achievement continues to increase in the secondary grades.[1]

Goodlad and Anderson,[2] also point out that non-graded structure is no universal cure for our educational shortcomings but that this system is more conducive to theories favoring continuous pupil progress, increased attention to individual differences, longitudional curriculum development and integrated learning. They state:

> The non-graded system is for those educators who would make use of present-day insights into individual differences, curriculum, and theories of personality and who would commit themselves to a comprehensive revision of elementary education.

The Edmonton Continuous Progress Plan is part of the movement which embraces the recognition of individual differences among students and the need for continuous pupil development.

In the Continuous Progress Plan students are grouped into "homogeneous" units. Pupils at the end of grade one are screened on the basis of I.Q., achievement and the teacher's judgment. The pupils are assigned to four groups: the superior, high average, low average and slow. An effort is made

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[1] Goodlad and Anderson, op. cit., pp. 27-8.

[2] Ibid., p. 216.

to combine a minimum of two groups in each classroom. Usually, the low average are grouped with the superior and the slow with the high average.

The C.P.P. also provides for the acceleration and deceleration of students without repetition or skipping of units. This Plan is essentially an administrative method which enables student to progress continuously through school at varying rates. Superior students should complete the six years of elementary work in five, the average groups should take the regular six years and the slower students should take seven, but they would not have to fail or repeat a year. Actual details of the organization of the C.P.P. are to be found in the Third Draft of the Principals' and Teachers' Manual.[1]

STATEMENT OF THE PROBLEM

The purpose of this study is to assess the academic achievement of pupils in the Edmonton Continuous Progress Plan and to compare their achievement with that of matched pupils in the traditionally graded program.

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[1]Edmonton Public School Board, The Edmonton Continuous Progress Plan: Principals' and Teachers' Manual. (Third Draft, 1962).

STATEMENT OF SUB-PROBLEMS

1. To assess and compare the academic achievement of pupils in the average groups in the Continuous Progress Plan with matched pupils in the traditionally graded program.

2. To assess and compare the academic achievement of pupils in the superior groups in the Continuous Progress Plan with matched pupils in the traditionally graded program.

NEED FOR THE STUDY

The Continuous Progress Plan began in the spring of 1957 at Parkallen School. In 1958 two more schools adopted the Plan. Seven more schools initiated this program in 1959 and in subsequent years the change-over gained momentum until now all elementary schools in the Edmonton system are in some stage of the Continuous Progress Plan. There is now a need to assess the academic achievement of students who have been a part of this Plan and a further need to determine how their academic achievement compares with that of students in the traditionally graded program. The academic achievement of pupils is of primary importance and it seems that any evaluation of the Continuous Progress Plan by trustees, administrators, teachers or parents would be considerably weakened

without this vital information.

DEFINITION OF TERMS

1. Six-Year Program - Program of studies in the Continuous Progress Plan covering the elementary curriculum in a period of six years.

2. Average Pupils - Pupils in the six-year program. The symbols 4/6 and 5/6 are used to indicate pupils in the fourth and fifth year of the six-year program.

3. Five-Year Program - Program of studies in the C.P.P. covering the elementary curriculum in a period of five years.

4. Superior Pupils - Pupils in the five-year program. The symbols 4/5 and 5/5 are used to indicate pupils in the fourth and fifth years of the five-year program.

5. Seven-Year Program - Program of studies in the C.P.P. covering the elementary curriculum in a period of seven years.

6. Slow Pupils - Pupils in the seven-year program. The symbol 6/7 is used to designate pupils in the sixth year of the seven-year program.

7. Graded Pupils - Pupils who are in the regular

graded program. The symbols 4g, 5g, 5gg, and 6g are used to designate pupils in the fourth, fifth and sixth years of the graded program, 4g pupils are matched with 4/6, 5g with 5/6, 5gg with 4/5 and 6g with the 5/5 pupils.

DELIMITATIONS

The subjects of this study are restricted to nineteen Edmonton Public elementary schools. Ten of these schools used the Continuous Progress Plan and the other nine were on the Graded Program.

Pupils from the C.P.P. schools included average and superior only. Not enough pupils from the seven-year program were available at the six year level (6/7) for useful statistical analysis.

The study will be limited to an assessment and comparison of academic achievement as measured by the Iowa Tests of Basic Skills in vocabulary, reading comprehension, language and arithmetic skills and the Edmonton Public School Board tests in arithmetic, reading, science and social studies.

BASIC ASSUMPTIONS

The following assumptions were made:

1. Teachers in both plans are comparable in ability and qualifications.

2. That all standardized tests were properly administered.

3. That the group of students were equally motivated on each test.

4. That all information from teachers was accurate.

5. That all standardized tests accurately measure performance in each of the academic areas tested.

6. That the Laycock Test may be considered to be a valid measuring instrument.

NULL HYPOTHESES

The following hypotheses will be tested in this study:

1. There is no significant difference in academic achievement between pupils in the fourth year of the six-year program (4/6) in the C.P.P. and matched pupils in grade four (4g) in the graded system.

2. There is no significant difference in academic achievement between pupils in the fifth year of the six-year program (5/6) in the C.P.P. and matched pupils in grade five (5g) in the graded system.

3. There is no significant difference in academic achievement between pupils in the fourth year of the five-year program (4/5) in the C.P.P. and matched pupils in grade five (5gg) in the graded system.

4. There is no significant difference in academic achievement between pupils in the fifth year of the five-year program (5/5) in the C.P.P. and matched pupils in grade six (6g) in the graded system.

CHAPTER II

REVIEW OF THE LITERATURE

A Review of the Literature on Classroom Organization by Selective Grouping

(a) Selective Grouping in the Edmonton Continuous Progress Plan.

Selective grouping is an integral part of the Edmonton C.P.P. All pupils are screened at the end of grade one on the basis of I.Q., achievement and teacher judgment. The pupils are then assigned to four groups; the superior, high average, low average and slow. An effort is made to combine at least two groups in each classroom. The slow pupils are usually grouped with the high average and the superior pupils are usually combined with the low average.

The following are some of the arguments in favor of selective grouping presented in the Principals' and Teachers' Manual:[1]

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[1] Edmonton Public School Board, The Edmonton Continuous Progress Plan: Principals' and Teachers' Manual. (Third Draft, 1962).

Through grouping of pupils, special assignments and other methods, instruction is differentiated so that each child is enabled to work at his own rate.[1]

The careful grouping required of the plan enables teachers to use their time to better advantage, plan more definitely, and hence get better results.[2]

The plan permits teachers to set realistic goals for the pupils which are within their ability to achieve.[3]

(b) Limitation of the Review of Literature

The review will be essentially limited to studies which investigate the effect of selective grouping on scholastic achievement. No reference will be made to the extensive research related to the effect of selective grouping on personal, social, emotional and citizenship development.

(c) The Goals that Selective Grouping Seeks to Attain

One major problem in education has been to find a method for classifying students that would result in the greatest possible gains for the students and at the same time, facilitate the best teaching techniques. Educators searching

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[1] *Ibid.*, p. 1.

[2] *Ibid.*, p. 8.

[3] *Ibid.*

for an answer to this problem have experimented with dividing classes into groups of a more homogeneous nature, usually on the basis of some measure of intelligence or achievement.

It would seem that in classes of reduced heterogeneity that the learning situation would be improved by facilitating the provision of more appropriate learning tasks, make more teacher time available to pupils and in stimulating the teacher to gear his teaching up or down depending on the level of the group. This in turn should result in greater achievement at each particular level.

(d) Reviews of the Literature

Miller and Otto,[1] analyzed a series of experimental studies in homogeneous grouping. They found that certain experiments suggested that homogeneous grouping is quite ineffective unless accompanied by proper changes in method and they concluded:

> So far as achievement is concerned, there is no clear-cut evidence that homogeneous grouping is either advantageous or disadvantageous. The studies seem to indicate that

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[1] W.S. Miller and Henry J. Otto, "Analysis of Experimental Studies in Homogeneous Grouping," Journal of Educational Research, 21:95-102, April, 1930.

homogeneous classification may be effective if accompanied by proper adaptation in methods and materials.

Ethel R. Cornell,[1] in a chapter titled, "Effects of Ability Grouping Determined From Published Studies," came to this conclusion:

> The results of ability grouping seem to depend less upon the fact of grouping itself than upon the philosophy behind the grouping, the accuracy with which the grouping is made for the purposes intended, the differentiations in content, method, and speed, and the technique of the teacher, as well as upon more general environmental influences. Experimental studies have in general been too piecemeal to afford a true evaluation of results, but when attitudes, methods and curricula are well adapted to further the adjustment of the school to the child, results both objective and subjective, seem to be favorable to grouping.

A review in the Encyclopedia of Educational Research,[2] suggests that experimental studies of ability grouping have been so plagued with difficulties relating to the many variables to be controlled and the diffused concepts about grouping that it is little wonder that no significant unanimity of findings has been reported. The following are listed as some

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[1]Ethel R. Cornell, "The Grouping of Pupils," Effects of Ability Grouping Determined From Published Studies, The Thirty-Fifth Yearbook of the National Society for the Study of Education, (Bloomington, Illinois: Public School Publishing Company, 1936), p. 304.

[2]H.J. Otto, "Organization and Administration," Encyclopedia of Educational Research, ed. Walter S. Monroe, (New York: The Macmillan Company, 1940), pp. 439-40.

of the conclusions based on studies up to 1940:

1. The evidence slightly favors homogeneous grouping as contrasted with heterogeneous grouping, particularly where adaptations of standards, materials, and methods are made.

2. The evidence regarding the relative merits of various types of adaptation of standards, materials, and methods is inadequate to form a judgment.

3. The evidence regarding the attitude of teachers towards ability grouping is that most teachers prefer to work with "homogeneous" rather than mixed groups.

4. The evidence indicates greatest relative effectiveness for dull children, next greatest for average children and least for bright children.

In a section of the fifty-seventh yearbook of the National Society for the Study of Education devoted to the Education of the Gifted, Passow,[1] indicates that of the considerable research reported under the heading of homogeneous versus heterogeneous grouping, no significant unanimity of findings has been established. However he states that:

> Comparative studies of gifted children in regular and special classes on all educational levels tends to be more uniform in denoting beneficial effects of the special classes on academic, personal, and social growth.

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[1] A.H. Passow, "Enrichment of Education for the Gifted," Fifty-seventh Yearbook: Education for the Gifted, National Society for the Study of Education, (Chicago, Illinois: University of Chicago Press, 1958), p. 207.

Goldberg,[1] indicates that recent research shows that when able students are placed into narrow-range ability groups that this grouping usually results in somewhat greater achievement.

Eckstrom,[2] found 13 studies which indicated differences favoring homogeneous grouping, 15 which found no differences or which found grouping detrimental, and 5 studies which gave mixed results. She found no consistent pattern for the effectiveness of homogeneous grouping related to age, ability levels, course contents or methods of instruction. Eckstrom concludes:

> That controlled experimental studies comparing the effectiveness of homogeneous and heterogeneous grouping as evaluated by student achievement showed a great variety of experimental designs and no consistent pattern of results. In experiments that specifically provided for differentiation of teaching methods and materials for groups at each ability level, and made an effort to push bright homogeneous classes, results tended to favor the homogeneous groups.

Anderson,[3] reports experimental studies of non-graded,

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[1] M.L. Goldberg, "Research on the Gifted," Teachers College Record, 60:150-63, December, 1958.

[2] R.B. Eckstrom, "Experimental Studies of Homogeneous Grouping: A Critical Review," School Review, 69:216-26, Summer, 1961.

[3] R.C. Anderson, "Case for Non-Graded Homogeneous Grouping," Elementary School Journal, 62:193-7, January, 1962.

homogeneous grouping. He concludes that research shows slightly greater achievement in non-graded groups.

Dockerell,[1] has this to say about grouping and achievement based on his study of a number of research studies:

> The evidence of the experimental studies is quite clear. Merely separating youngsters into different rooms on the basis of intelligence or achievement is valueless. Much more than this is required for grouping to have any effect on achievement. It seems clear that very carefully prepared programs of enrichment are necessary and that their preparation is difficult.

Dockerell also emphasizes the personality and role of the teacher as prime factors in influencing achievement within any organizational scheme.

Passow,[2] indicates that studies on the effectiveness of homogeneous grouping fail to show any great consistency in their findings. The experimental results differ greatly because of a wide variety of experimental conditions, methods and purposes. Few studies have much in common in content, method or type of subjects used. The major deficiency in most of the experiments that compare homogeneous and

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[1]W.B. Dockerell, "Special Education for Gifted Children," Canadian Education and Research Digest, 3:37-45, March, 1962.

[2]A.H. Passow, "Maze of the Research on Ability Grouping," Educational Forum, 26:281-8, March, 1962.

heterogeneous grouping is the failure to provide for differentiation of course content and method according to level ability.

Passow notes that as the number of grouping studies accumulates the inconclusiveness of research findings becomes more and more apparent. He lists the following reasons which may account for the difficulties in generalizing from available research on the effects of ability grouping:

1. Studies differ in the number of students, the number of groups and size of classes involved.
2. Studies vary considerably in scope of aim and purpose.
3. Studies differ in duration.
4. Studies differ in the adequacy of the selection bases and the means of matching experimental and control groups.
5. Studies differ in deployment of teachers in various groups.
6. Studies differ in instruments and techniques used in evaluating changes in students.
7. Studies have generally failed to assess the effects of groupings on teachers and administrators.

Passow,[1] sums up the findings in this way:

> Experimental studies of grouping have failed to show consistent, statistically or educationally significant differences between achievement of pupils in homogeneous groups and pupils of equal ability in heterogeneous groups, but while evidence is contradictory there are studies which indicate that homogeneous classification may be effective if accompanied by proper adaptation in methods and materials.

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[1] Ibid.

(e) Research Investigating the Effect of Selective Grouping on Academic Achievement

Gray and Hollingsworth,[1] report a study where a group of young children, all testing at or above 130 I.Q. (Standard-Binet) was segregated in 1922, in New York City, to form special classes. Children thus selected were given an opportunity to advance in the prescribed subjects and were also exposed to an enrichment program which included such topics as conversational French, biography, history of civilization, and much extra work in science, mathematics, English composition and music. The program was carried on for three years. At the end of this period the experimental group was matched with a comparative group similar in age and intellectual capacity who had attended regular grades of the elementary schools and had at no time been segregated in special classes.

On the basis of Stanford Achievement tests administered in June, 1925 the authors concluded that there were no statistically significant differences between the two groups in reading, arithmetic and spelling. The testers emphasized the

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[1] H.A. Gray and Leta S. Hollingsworth, "The Achievement of Gifted Children Enrolled and Not Enrolled in Special Opportunity Classes," Journal of Educational Research, 24:255-61, November, 1931.

fact that the experimental group had covered a large amount of intellectual work in addition to that of the ordinarily prescribed school subjects, without detriment to their achievement in the latter.

Barthelmess and Boyer,[1] report on a study undertaken in Philadelphia during the Thirties. Elementary pupils in grades four and five in grouped schools were compared with that of control schools on the basis of records of paired pupils in the two types of schools. Pupils were grouped on the basis of the Otis Classification or Philadelphia Intelligence test, estimated rate of progress and teacher judgment. Pupils in the experimental group were paired with counterparts in the control group on the basis of a similar classification index, same chronological age, and similar initial composite achievement test scores. Teacher efficiency measured by a percentile rank score was found to be approximately the same for both groups.

Pupils were given achievement tests devised in the Philadelphia system and testers found a statistically significant difference in favor of homogeneously grouped pupils in

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[1]Harriet Barthelmess and P. Boyer, "An Evaluation of Ability Grouping," Journal of Educational Research, 26:284-94, December, 1932.

arithmetic, reading and technical English skills. The authors concluded that their study offers strong evidence that homogeneous grouping can be a factor in securing improvement in certain important skill subjects.

It should be noted that little is said regarding motivational or socio-economic effect and it is also probable that some of the superiority of the experimental group might have been due to greater professional stimulation.

Russell,[1] reports an evaluation of inter-classroom grouping used in grades four, five and six in the San Francisco Public Schools. In this system pupils changed rooms so that they received instruction in reading in a group which corresponded to their own level of reading ability. Teachers under this plan usually have only two sub-groups for reading in any one class.

The study compared the achievement of 278 children who had participated in special groups for two years with a group of 248 children of approximately the same chronological age, mental age, reading achievement and locale of school.

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[1] D.H. Russell, "Inter-Class Grouping for Reading Instruction in the Intermediate Grades," Journal of Educational Research, 39:62-70, February, 1946.

Standardized tests indicated no reliable differences in status or achievement between the the two main groups in either mental age or reading score.

Justman,[1] reports on a study carried on in New York City where homogeneously grouped classes were organized in which pupils completed the normal span of junior high school work in two, rather than three, years. These classes enrolled children with intelligence quotients of 130 and higher who showed superior academic achievement and who also possessed personal characteristics of initiative, enthusiasm, willingness to work, reliability, regular attendance, and capacity for sustained work. A group of these special-progress children was matched with counterparts on the basis of school attended, grade, sex, chronological age, mental age and intelligence quotient.

On the basis of various tests administered, Justman concludes that the grouping of gifted children in homogeneous classes is accompanied by higher academic achievement than that attained by matched pupils in normal-progress classes.

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[1] J. Justman, "Academic Achievement of Intellectually Gifted Accelerants and Non-Accelerants in Junior High School," School Review, 62:142-50, March, 1954.

The author points out that two factors which could conceivably have effected pupil achievement were not taken into account. No attempt was made to establish the equivalence of the two groups in ability in the three subject areas at the beginning of the survey period and the special-progress pupils had been exposed to a much wider range of subject matter in an equivalent span of time.

Clarke,[1] measured the reduction in the variability of achievement produced by grouping on the basis of intelligence and on the basis of reading achievement. His study indicates that a greater reduction in variability in achievement is produced by grouping on the basis of reading tests than by intelligence testing. Clarke concluded that the extent of reduction in variability which can be achieved by either form of grouping is not great.

Thelen,[2] in a provocative article presents arguments and examples to develop the contention that greater achievement may be realized if the teacher fully understands and

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[1] S.C.T. Clarke, "The Effects of Grouping on Variability in Achievement at the Grade III Level," Alberta Journal of Educational Research, 4:162-71, September, 1958.

[2] H.A. Thelen, "Classroom Grouping of Students," School Review, 67:60-78, Spring, 1959.

takes into account the way in which each group operates and inquires, and that the group should be selected partly on the grounds of its probable success under a described method rather than on the basis of equivalent ability or achievement. Thelen concludes:

> In brief, carefully considered grouping plus appropriate methods for each group is far more likely to produce increased achievement than grouping designed simply for increased manageability or comfort.

Koontz,[1] reports a study where pupils were grouped homogeneously on the basis of subject matter achievement. Experimental subjects were chosen in grade four and grouped on the basis of scores achieved on the Iowa Tests of Basic Skills. Homogeneous groups were formed in three areas: arithmetic, language and reading. Pupils were placed in a specific arithmetic class on the basis of their arithmetic scores and they were also placed in specific classes in language and reading based on the scores they achieved in these two subject areas. As a result of this administrative organization it was necessary for these pupils to shift classes for study in arithmetic, language and reading.

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[1]W.F. Koontz, "Study of Achievement as a Function of Homogeneous Grouping," Journal of Experimental Education, 30: 249-53, December, 1961.

Control pupils were matched with experimental pupils in each of the three areas and achievement of the experimental and control groups was measured at the close of the fourth grade. The results indicated that grouping did not have any significant effect on achievement in any of the three subject areas. The groups, both experimental and control, reacted essentially the same and there were no real differences in achievement.

Goldberg and Passow,[1] report an experiment where five ability levels were designated as follows: gifted, I.Q. 130 and above, very bright, I.Q. 120-129, bright, I.Q. 110-119, high average, I.Q. 100-109 and low and below average, 99 and lower. In order to assess each ability level either alone or in combination with one, two, three or four of the other levels, fifteen grouping patterns were organized. The findings in this report relate to the effects on academic achievement of the presence or absence of gifted children, of ability range and of relative position in range.

The study showed that the presence of gifted pupils tended to raise the science achievement for all other ability

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[1] M.L. Goldberg and A.H. Passow, "Effects of Ability Grouping," Education, 82:482-7, April, 1962.

levels and, to some extent, the social studies achievement of bright and high-average pupils. Conversely, the presence of low- or below-average pupils tended to raise the arithmetic attainment for all other pupils. The two extreme groups had little or no effect on achievement in other subjects. Average achievement, across all subjects was greatest in classes with pupils of four or five ability levels, but no one grouping pattern proved best for all ability levels in all subjects.

The effects of the teacher on the achievement gains of the class were more potent than the effects of pupils' intelligence, ability range or relative position. Class-to-class differences were greatest for gifted pupils and least for the slowest groups.

As measured by pupil achievement, some teachers did well in teaching effectiveness in all subjects and others did poorly, but most teachers achieved far better results in one or two subjects than they did in others. This was particularly true for the gifted group. Most teachers were more successful in teaching one subject to several ability groups, simultaneously, than in teaching all subjects, even in narrow-range classes.

The authors conclude that, on the basis of this study,

ability grouping by itself -- that is, the mere physical assembling of pupils with similar ability -- did not have any positive effect on academic attainment of fifth- and sixth-grade pupils. Gains in achievement were influenced more strongly by teacher and group differences, in individual classrooms, than by the presence or absence of gifted pupils, the range of ability in the class, or even by the intellectual ability of the pupils.

The results of the experiments reviewed in this chapter seem to further point to the conclusion that experimental studies have failed to show consistent, statistically or educationally significant differences between the achievement of pupils who have been selectively grouped and their matched counterparts in the standard heterogeneous groups.

A Review of a Portion of the Literature on the Acceleration of Academically Gifted Children

(a) Acceleration in the Continuous Progress Plan

The acceleration of academically gifted pupils is an essential feature of the C.P.P. After a screening process at the end of grade one, superior pupils are placed in the five-year program. The work of the six elementary years is divided

into eighteen units or three units per year. Pupils in the five-year program cover three units in grade one, four units per year for the next three years and the last three units in their fifth year. Thus the five-year pupil completes four years of work (grades two, three, four and five) in three years. The C.P.P. enables a superior pupil to complete the regular six-year program in five years.

The Principals' and Teachers' Manual presents the following arguments in favor of its program of acceleration:[1]

> Permits able students to proceed more rapidly instead of being held back to conform with the inflexibility of the rigid grade system.[2]
>
> The plan stimulates the school to provide an enriched program for its brighter students.[3]
>
> Superior pupils should complete six years' work in five years without "skipping".[4]
>
> It will help to provide greater challenge to the more able students.[5]

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[1] Edmonton Public School Board. The Edmonton Continuous Progress Plan. Principals' and Teachers' Manual, Third Draft, 1962.

[2] Ibid., p. 8.

[3] Ibid.

[4] Ibid., p. 5.

[5] Ibid., p. 1.

(b) Limitation of the Review of Literature

The review will be essentially limited to studies which investigate the effect of acceleration on scholastic achievement. Very little reference will be made to research which investigates the effect of acceleration on social and personal adjustment.

(c) The Problem of School Acceleration

There has been much controversy regarding the extent to which academically gifted children should be allowed to become accelerated in school. At one extreme is the opinion that the gifted child should be given a grade placement corresponding to his mental age; at the other extreme are those who would base promotions on the calendar without regard to mental ability. Neither of these extreme views has many advocates, though the latter is perhaps more commonly held than the former.[1] The fact remains, however, that many educators believe considerable acceleration is desirable whereas many

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[1] L.M. Terman and M.H. Oden, The Genetic Studies of Genius: The Gifted Child Grows Up, (Stanford: Stanford University Press, 1947), pp. 264-5.

others are opposed to it.[1]

Schools are usually faced by the choice between acceleration and nonacceleration in grading systems designed primarily for the average. Attempts are often made to enrich the program for especially bright children in the ordinary classroom, and such programs at their best can be very helpful. Unfortunately, the so-called enrichment often amounts to little more than a quantitative increase of work on the usual level. This may keep the gifted child out of mischief, but it is hardly educational.

The most common arguments in favor of acceleration are that it improves the child's motivation, prevents him from developing habits of dawdling, allows earlier completion of professional training, and makes earlier marriage possible. The total cost of the child's education would be somewhat reduced, but this is hardly a major consideration. On the other side it is argued that acceleration aggravates the child's problem of social adjustment, promotes bookishness and one-sided development, is dangerous to physical or mental health,

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[1] F.T. Wilson, "Educators' Opinions About Acceleration of Gifted Students," School and Society, 80:120-22, October, 1954.

and leaves gaps in the child's academic knowledge and skills.[1]

(d) Reviews of the Literature

Wilson,[2] reviews studies by Terman, Keys, Engle, Flesher, Pressey and Wilkins to support the hypotheses that in general, acceleration is beneficial and that more harm than good is done gifted individuals by denying acceleration appropriate to their degree of giftedness and other characteristic needs and abilities, and how much, if any, acceleration there is should be determined by appraisal of individual needs.

Shannon,[3] cites research studies in the defense of acceleration as one practice which meets the needs of gifted children. The report of the National Education Association,[4] also indicates that research testimony as to the advantages of acceleration is weighty, consistent and continuous over

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[1]Terman and Oden, loc. cit.

[2]F.T. Wilson, "Evidence About Acceleration of Gifted Youth," School and Society, 73:409-10, June, 1951.

[3]D.C. Shannon, "What Research Says About Acceleration," Phi Delta Kappan, 39:70-72, November, 1957.

[4]National Education Association Project on the Academically Talented Student, Research on the Academically Talented Student. (Washington, D.C., National Education Association, 1961).

several decades. Goldberg points to research which supports acceleration as a satisfactory method of challenging able students, which emphasizes the necessity of individual screening and which supports the contention that gifted youngsters should complete their formal schooling at an earlier age than is now the case. She also points out that research does not support the contention that acceleration is the best method of providing a greater challenge for able students and that an optimum time for acceleration has not been satisfactorily determined.[1]

Pressey,[2] reports that on the basis of his investigations of studies of acceleration programs which carefully selected and guided their students, that these students do as good academic work and are as socially adjusted as others with the same initial ability who took a regular program at a standard rate. He further states that where selection and methods have been less careful, acceleration has been found, in almost all systematic evaluations, to work out well for most students.

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[1]Miriam Goldberg, "Recent Research on the Talented," Teachers College Record, 60:150-53, December, 1958.

[2]S.L. Pressey, "That Most Misunderstood Concept, Acceleration," School and Society, 79:59-60, February, 1954.

(e) Research Investigating the Effect of Acceleration on Academic Achievement

In a study reported in 1932 by Unzicker,[1] 30 promising youngsters were chose in grade seven to complete the regular grade seven and eight courses in one year. Twenty-two of the students who completed this program entered grade nine. Twenty-two students who had spent two years completing grades seven and eight were chosen for the control group. Students were matched on the basis of previous scholastic records, chronological age and I.Q. Duplication of teachers and testing materials for the two groups being tested was attempted wherever it was practically possible. At the end of the year standard tests were given to the entire grade nine student body of 280. The results of the various tests administered failed, in the aggregate, to show a significant advantage for either group. It may be concluded that the accelerated section was as capable of doing work of the ninth grade as was the group which was not accelerated.

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[1] S.P. Unzicker, "A Study of Acceleration in the Junior High School," School Review, 40:346-56, May, 1932.

Engle,[1] reports a study where 46 accelerated students, 46 students chosen randomly from the high school and 110 members of the graduating class are compared on the basis of marks and averages. From the evidence the author concludes that accelerated pupils made better marks in high school than their non-accelerated classmates.

Wilkin's study surveys the high school achievement of students who were accelerated in elementary and junior high school. Average marks of accelerated high school pupils were obtained and these showed that 50% of the students did superior work, about 40% average work and that approximately 9% did inferior work and 1% did failing work.[2]

Justman,[3] reports a study from the New York City System. New York has formed homogeneously organized special classes in which pupils complete the normal span of junior

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[1]T.L. Engle, "A Study of the Scholastic Achievements In High School of Pupils who have had Double Promotions in Elementary School," Elementary School Journal, 31:132-35, October, 1930.

[2]W.L. Wilkins, "High-School Achievement of Accelerated Pupils," School Review, 40:268-73, April, 1935.

[3]J. Justman, "Academic Achievement of Intellectually Gifted Accelerants and Non-Accelerants in Junior High School," School Review, 62:142-50, March, 1954.

high school work in two, rather than three years. These classes enrol children with I.Q.'s of 130 and higher who show superior academic achievement and who also possess personal characteristics of initiative, enthusiasm, willingness to work, reliability, regular attendance and capacity for sustained work. Accelerated students were matched with pupils from the normal-progress classes on the basis of school attended, grade, sex, chronological age, and I.Q.'s. Approximately 70 to 83 matched pairs participated in the experiment.

Accelerated students showed significantly higher attainment on all three content tests in science, mathematics and social studies. An analysis by the covariance technique indicated that part of the difference could be attributed to the initial superiority of the accelerated group in reading. A rating scale was developed by Justman to test creative expression in the language arts. A comparison of mean ratings on the original story showed that the special-progress classes showed better performances in every category and that in overall rating and in the area of feeling tone and vividness of diction and style the mean ratings obtained by the accelerated group proved to be significant at the .05 level.

The basic weakness in the study was the choice of a

control group. The very variables which excluded students from the special-progress group, such as motivation, regular attendance, willingness to work and so on, are factors that are bound to have a definite effect on achievement. Some of the better attainment of the accelerated group must be attributed in part to the selection for such classes of pupils with greater initial mastery of reading skills and certain personal characteristics associated with achievement. But, it seems that the findings from the experiment are sufficiently significant to indicate that some advantage is associated with pupil enrolment in a special-progress group. On the basis of the evidence it seems clear that the segregation of intellectually gifted pupils into homogeneous accelerated groups in the junior high level has some value.

Klausmeier and Ripple,[1] report from a study where they attempted to ascertain the effects of accelerating pupils from the second to the fourth grade. The pupils were of superior learning abilities who were also above the median chronological age of all second graders in the Racine Schools. The

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[1]H.J. Klausmeier and R.E. Ripple, "Effects of Accelerating Brighter Older Pupils from Second to Fourth Grade," Journal of Educational Psychology, 53:93-100, April, 1962.

accelerates attended a five-week summer session in order to complete the essential content of the third grade. Classes met from 8:00 to 12:00 a.m. Monday through Friday. The courses offered included cursive handwriting, language arts, arithmetic and sessions emphasizing the development of the students' expressive abilities.

In comparison of the accelerated pupils with pupils in five other control groups it was found that in general accelerated pupils were significantly higher than the younger third graders of superior learning abilities, significantly lower than older fourth graders of superior learning ability, not significantly different from younger fourth graders of superior learning abilities and significantly higher than older and younger fourth graders of average learning abilities. On the whole it would appear that acceleration was not harmful to the students. The only observed negative effect was relatively low peer acceptance for the accelerated boys.

Green,[1] used the STEP tests in mathematics, reading, science and writing to compare the achievement of pupils in

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[1]D.P. Green, "An Evaluation of Methods Used for Programme Assignment in Edmonton's Continuous Progress Plan," (unpublished Master's thesis, The University of Alberta, Edmonton, 1963).

the different groups of the Edmonton Continuous Progress Plan. He found that in comparing the mean performances of the pupils in the fourth year of the five-year plan with high average groups in the fourth year of the six-year plan that the former group performed significantly better in reading and writing. Non-parametric U tests indicated that pupils in the five-year program were also significantly better in mathematics and science. Green also found that pupils in the fifth year of the five-year program, when compared on the basis of means, scored significantly higher on the tests in mathematics and science than pupils in the fifth year of the six-year program. Neither group showed a significant difference in achievement in reading and writing.

The superiority of the accelerated pupils in the five-year program might be partly attributed to the fact that these groups had been offered a much wider range of subject matter in an equivalent span of time.

The three early studies on the effect of acceleration on academic achievement show that students who have been accelerated achieve as well or in some cases better than those who have not been accelerated. The modern studies, which are superior in design and in statistical analysis, basically

support the earlier findings.

(f) Research Investigating the Progress of Accelerated Students After High School Graduation

Terman and Oden,[1] report a study where the vocational history and avocational interests of accelerants and non-accelerants was studied. No significant relation between acceleration and occupational status was found in the case of the women studied but evidence showed that among men the accelerants more often than non-accelerants were in the professional and higher business occupations and less often in the lower occupational groups. Results of inquiries showed no significant difference between accelerants and non-accelerants in the frequency with which any given avocational activity was mentioned.

In another study, Terman and Oden studied the relation between acceleration and educational history. Data were collected to show the relationship of acceleration to (1) proportion of graduates from college (2) proportion completing one or more years of graduate work (3) age at college

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[1]Terman and Oden, op. cit., pp. 270-2.

graduation (4) average grade in college and (5) winning of graduation honors. The results showed that the greater the degree of acceleration, the greater was the likelihood of graduation from college and for remaining for one or more years of graduate study. A slightly larger proportion of accelerants made an average of B or better in college and the accelerants did a trifle better in winning graduation honors despite the fact that the mean age of graduation was 2.4 years younger for accelerants than for non-accelerants.[1]

In the study of acceleration as related to social adjustment, Terman and Oden,[2] concluded that the influence of school acceleration in causing social maladjustment has been greatly exaggerated. There is no doubt that maladjustment does result in individual cases but Terman's data seems to indicate that accelerated students as a group have no greater problems of adjustment than non-accelerated students.

It is the opinion of Terman that children of 135 I.Q. or higher should be promoted sufficiently to permit college entrance by the age of seventeen at the latest and that a

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[1]Terman and Oden, op. cit., pp. 268-70.

[2]Terman and Oden, op. cit., pp. 273-5.

majority in this group would be better off to enter at sixteen. He further argues that aaceleration is especially desirable for those who plan to complete two or more years of graduate study in preparation for a professional career.[1]

Pressy and Combs,[2] report a study where volumes of the Dictionary of American Biography and the 1942 volume of Current Biography were checked to study the productiveness of outstanding men. They found that the twenties are a very productive period in a person's life. The study also indicated that early age in entering professional life is an argument in favor of acceleration of the gifted in school.

Flesher,[3] undertook a study to determine in what ways students graduating from college at the age of twenty years or younger differed from those receiving their degrees at the customary age of twenty-two years. Analysis of the data obtained showed that the younger graduates outdid their elders in securing advance degrees. A greater number of them secured

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[1]Terman and Oden, op. cit., pp. 279-81.

[2]S.L. Pressy and Arthur Combs, "Acceleration and The Age of Productivity," Educational Research Bulletin, 22:191-6, October, 1943.

[3]Marie A. Flesher, "Did They Graduate Too Young?," Educational Research Bulletin, 24:218-22, November, 1945.

teaching positions immediately after graduation. More of them were able to secure top salaries in the teaching profession. They impressed their school administrators more favorably as teachers and throughout the record of the younger graduates is as good or better than that of the older graduates.

A paper by Flesher and Pressy,[1] reports a follow-up some ten years after graduation from college, of a group of young women who during the war years completed a four-year undergraduate program in three years or less. The researchers found that twice as many accelerates had earned further academic degrees as compared to non-accelerates and that almost twice as many of the married accelerates were continuing a career.

The reports above essentially describe the accelerated student after he has left school and it appears from the evidence that these students fare as well as the non-accelerants in many fields of accomplishment and that in some fields the accelerants outdo the students with a longer period of formal schooling.

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[1] Marie A. Flesher, and S.L. Pressy, "War-Time Accelerates Ten Years After," Journal of Educational Psychology, 46:228-38, April, 1955.

CHAPTER III

THE EXPERIMENTAL DESIGN

This chapter will discuss the two basic designs used in obtaining necessary data, the test population, the testing instruments, a description of the tests, the testing procedure and the treatment of the data.

(a) Experimental Design 1

Continuous Progress Plan schools were categorized according to socio-economic levels. This grouping was done by J.N. Polonuk, former Zoning Officer with the City of Edmonton and now Secretary to the Provincial Planning Advisory Board. The average assessment of family homes in each district was used as the criterion for classification. One school was randomly selected from each of the upper, middle and lower levels. Pupils in the fourth and fifth year of the six-year program were chosen as the experimental group.

The control pupils were chosen from schools which were using the graded system. These schools were also categorized into high, middle and low socio-economic groups. Three schools were randomly selected from each of the socio-economic categories and a group of fourth and fifth grade pupils were

individually matched on the basis of socio-economic status of school attended, sex, I.Q. and academic content covered. The mean age and I.Q. of each group was also determined.

The experimental and control groups were tested on the Iowa Tests of Basic Skills in vocabulary, reading comprehension, language skills and arithmetic skills and the Edmonton set of achievement tests in reading, arithmetic and science at the grade four and five level.

(b) Experimental Design 2

All C.P.P. schools that have pupils in the fourth and fifth year of the five-year program were included in this experiment. These schools were also categorized according to socio-economic levels. Pupils from these schools, that were in the fourth and fifth year of the five-year program, were chosen for the experimental sample.

The control pupils were drawn from the same random sample used in Design 1. The C.P.P. pupils in the 4/5 program were matched with pupils in grade 5, and those in the 5/5 program were matched with pupils in grade 6. Pupils were again matched on the basis of socio-economic status of school attended, sex, I.Q., and academic content covered. The mean age and I.Q. for each group was also computed.

Both groups were tested on the Iowa Tests of Basic Skills in vocabulary, reading comprehension, language skills and arithmetic skills, and the Edmonton set of achievement tests in reading, arithmetic and science at the grade 5 and 6 level and social studies at the grade 6 level only.

SELECTION OF SAMPLE

(a) Selection of Average Pupils in the 4/6 and 5/6 Programs in the C.P.P.

Pupils were selected from ten schools which had progressed to at least the fifth year of the C.P.P. All of these schools included pupils in the 4/6, 5/6, 4/5, and 5/5 programs. There were approximately 800 pupils in the 4/6 program and 750 in the 5/6 program in these ten schools. The ten schools were divided into three socio-economic groups and one school was randomly chosen from each of the socio-economic strata. The entire population of 4/6 and 5/6 pupils from each of the randomly chosen schools became the experimental sample. This sample included 125 pupils in the 4/6 classes and 99 pupils at the 5/6 level. Distribution by socio-economic status of school is included in Table I.

TABLE I

GENERAL DESCRIPTION OF THE RESEARCH GROUPS

Research Groups	N	Mean I.Q.	Mean Age	Socio-Economic Distribution
C.P.P. 4/6	125	115.1	9.8	H-37 M-59 L-29
Graded 4g	125	115.4	9.9	H-37 M-59 L-29
C.P.P. 5/6	99	116.8	10.9	H-28 M-50 L-21
Graded 5g	99	116.7	10.9	H-28 M-50 L-21
C.P.P. 4/5	80	132.2	9.9	H-24 M-39 L-17
Graded 5gg	80	131.4	10.8	H-24 M-39 L-17
C.P.P. 5/5	70	131.5	10.9	H-21 M-42 L-7
Graded 6g	70	131.0	11.8	H-21 M-42 L-7

H - High
M - Middle
L - Low

(b) Selection of Matched Pupils in the Grade Four and Five Programs in the Graded Plan

Forty-six schools in the Edmonton System still had pupils in grades four, five and six in the Graded Plan. These schools were divided into three socio-economic groups and three schools from each category were randomly chosen. Pupils from grade four were matched with pupils in the 4/6 program. These graded pupils were designated by the symbol 4g. Pupils from grade five were matched with pupils in the 5/6 program. These pupils were designated by the symbol 5g.

(c) Selection of Superior Pupils in the 4/5 and 5/5 Programs in the C.P.P.

The entire population of 4/5 and 5/5 pupils, from the ten schools including both of these programs, is used for the experimental sample. This sample included 80 pupils from the 4/5 and 70 pupils from the 5/5 programs.

(d) Selection of Matched Pupils in Grades Five and Six in the Graded Plan

The pupils from the 4/5 program were matched with grade five pupils from the nine randomly chosen graded schools

previously mentioned. This control group of grade five pupils is designated by the symbol 5gg. The pupils from the 5/5 program were matched with pupils in grade six in the Graded Plan. These pupils are designated by the symbol 6g.

(e) Basis of Matching Pairs

Each pupil from the C.P.P. is matched with a pupil in the Graded Plan. Each matched pair,

1. is within a range of five I.Q. points based on the Laycock I.Q. Test.

The following categories were used in matching pupils"

80-84, 85-89, 90-94, 95-99, 100-104, 105-109, 110-114, 115-119, 120-124, 125-129, 130-134, 135-139, 140-144, 145-149, 150-154.

2. is of the same sex.

3. attended a school of the same approximate socio-economic background.

4. has covered approximately the same content and course of studies.

The mean ages and I.Q.'s of each group is included in Table I.

TESTING INSTRUMENTS

Two sets of testing instruments were used in determining academic achievement:

(a) Iowa Tests of Basic Skills in vocabulary, reading comprehension, language skills and arithmetic skills.

(b) Achievement tests used in the Edmonton Public School System.

(a) Iowa Tests of Basic Skills

The Iowa tests were chosen for the following reasons:

1. The Iowa battery includes tests in reading and arithmetic. These subjects are especially emphasized in the C.P.P.

2. This battery received a favorable recommendation from the testing specialists at the University of Alberta and by other authorities.

3. Availability of test booklets was also an important factor. Approximately 350 booklets were available in the Edmonton district. These were collected from the Department of Education, the West Jasper Place School Board and The Edmonton Public School Board.

The Iowa tests are devised to test functional skills

of children in grades three to nine in the areas of vocabulary, reading comprehension, work-study skills, language skills and arithmetic skills. These areas and their subdivisions are common to every elementary school curriculum and represent important and common objectives of every elementary school teacher.

Thorndike and Hagen,[1] in their evaluation of achievement tests consider that the Iowa Battery provides, "an excellent appraisal of significant educational outcomes". They also indicate that reliabilities of sub-tests are acceptable, and that of total tests, very good. The manuals for teachers and administrators are favorably appraised.

Herrick,[2] in the Fifth Mental Measurements Yearbook, states:

> While the bulky test booklets may prove cumbersome and complex for young children to handle and use, the advantages of economy and flexibility may outweigh these disadvantages. The real strength of the tests is in their curricular validity, careful construction, provision of adequate norms based on a national sample and high

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[1]Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education, (New York: John Wiley and Sons, Inc., 1959),

[2]V.E. Herrick, Iowa Tests of Basic Skills, Fifth Mental Measurements Yearbook, ed. Oscar K. Buros, (New Jersey: The Gryphon Press, 1959), pp. 30-34.

> reliabilities. The manuals provide the teacher with excellent help in using test results to improve instruction. These advantages outweigh the disadvantages of length and time necessary for administration. The tests, for their purposes, are among the best available at this time.

C.A.V. Morgan,[1] is basically in agreement with Herrick. He points out that the Iowa tests are very well constructed and standardized and that the tests enjoy an excellent background in fundamental research and understanding of educational aims. Morgan's chief criticism seems to be that width and imagination in the language tests have been partially sacrificed in the interest of gaining technical efficiency in objective response form and rapid scoring. Again, there is a strong recommendation endorsing the Iowa Battery as one of the best in the category of achievement tests.

H.H. Remmers,[2] of Purdue University reiterates many of the recommendations made by previous appraisers. He states:

> No battery of achievement tests intended for civilian use has been constructed with greater technical sophistication, greater adequacy of statistical bases, and greater use of previous research. A consummation devoutly to be

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[1] C.A.V. Morgan, Iowa Tests of Basic Skills, Fifth Mental Measurements Yearbook, ed. O.K. Buros, (New Jersey: The Gryphon Press, 1959), pp. 34-36.

[2] H.H. Remmers, Iowa Tests of Basic Skills, Fifth Mental Measurements Yearbook, ed. O.K. Buros, (New Jersey: The Gryphon Press, 1959), pp. 36-37.

wished for would be tools to measure values (the affective domain) which were as good as this battery appears to be in the cognitive domain.

Reliability and Validity

The reliability coefficient and the standard errors of measurement in Table II were taken from the manual for Administrators, Supervisors and Counselors, for each area total for grades 4, 5 and 6. The reliability coefficients were computed by the split-halves procedure. Each coefficient is based on five hundred cases drawn at random from the complete standardization sample at that grade level. Reliability data presented apply to scores obtained at the beginnings of the school year. Limited preliminary data indicate slightly higher coefficients for scores obtained at mid-year and end-of-the-year testings.[1]

The Manual has this to say about validity:

> All the commonly used principles in the validation of test content have been applied in the preparation of individual test items. Courses of study, textbooks and instructional procedures have been analyzed carefully. The items constituting the tests have been critically selected for cruciality and discriminating power from a very much larger stock of original items, on the basis of an unusually extensive and representative tryout. For the construction of Forms 1 and 2, more than 7000

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[1]University of Iowa, Manual for Administrators, Supervisors and Counselors, Iowa Tests of Basic Skills, (Boston: Houghton Mifflin Company, 1956), pp. 72-74.

TABLE II

STANDARD ERRORS OF MEASUREMENT AND RELIABILITY COEFFICIENTS FOR THE IOWA TESTS OF BASIC SKILLS: GRADES FOUR, FIVE AND SIX

Test	Grade 4		Grade 5		Grade 6	
	Standard Error of Measurement Raw Score Units	Reliability Coefficient	Standard Error of Measurement Raw Score Units	Reliability Coefficient	Standard Error of Measurement Raw Score Units	Reliability Coefficient
Vocabulary	3.30	.86	2.62	.92	2.89	.92
Reading	2.83	.96	3.72	.94	3.64	.93
Language Total	1.27	.95	1.38	.95	1.39	.95
Arithmetic Total	2.54	.90	1.78	.89	1.94	.90

> items were tried out. With few exceptions each item was tried out in about 4000 schools. The pupil's ability to use the skills acquired is tested in situations approximating, as closely as it is possible to a pencil and paper test, the actual situations in which he may have occasion to use these skills.[1]

This extensive and thorough quest for high validity is confirmed by the critics Herrick, Morgan and Remmers in the Fifth Mental Measurements Yearbook.

Organization of the Test Battery

1. Vocabulary Test - The items in this test consist of a word in context followed by four possible definitions. Nouns, verbs and adjectives were given approximately equal representation, with a few adverbs at each grade level. The purpose of each item is to determine if the pupil knows the meanings of all the words used in the item.[2]

2. Reading Comprehension Test - This test consists of selections which vary in length from a few sentences to a full page. The passages were adapted from all of the types of material encountered by the pupil in everyday reading. Items in all the tests place a premium on understanding and drawing

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[1] Ibid., pp. 11-12.

[2] Ibid., p. 52.

inferences from the reading selections. Recognition and understanding of stated or implied factual details and relationships, detection or recognition of the purpose or main idea of a paragraph or selection, development of the ability to organize ideas and development of skill in evaluating what is read are some of the specific skills measured by the Iowa test.[1]

3. Language Skills Tests - The language skills are covered in the Iowa tests by separate tests in the four areas of spelling, capitalization, punctuation and usage. The basic type of item employed in all four tests may be described as the "find-the-error" type. The more traditional type of multiple-choice exercise in which the pupil must decide which one of a set of alternatives is correct for a given situation was also used.

The items in the spelling test consist of four words, one of which may be misspelled. The student is to identify the incorrect word. A fifth response, "No Mistakes", is included in each item.

The items in the capitalization and punctuation test are closely similar in format. They include one or two sentences extending over three lines of approximately equal

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[1] Ibid., pp. 54-56.

length. The student is instructed to identify the line which contains an error or to elect a fourth response, indicating the total absence of errors.

The language usage test was designed to include error situations arising in both written and oral language activities. As in the capitalization and punctuation tests, content was judged against the criterion of appropriateness for the individual grade levels. The usage items consist of three sentences, one of which may contain a usage error. The student is to identify that sentence which contains the error or select the fourth response, "no mistakes", if he believes all three sentences to be correct.[1]

4. Arithmetic Skills Tests - The test in arithmetic is divided into two half-hour units which test knowledge of concepts and skill in problem solving.

In the test measuring mastery of arithmetic concepts, the emphasis is on understanding the number system, of terms, processes, and operations, and of units of measurement. In the test on problem solving, competence is tested in a functional setting in problems which have been chosen to be challenging and practical. The fundamental operations and

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[1] Ibid., pp. 57-64.

concepts involved in the problems for a particular grade are those generally presented prior to the end of that grade in the most recently published textbook series in widespread use. A conscious attempt was made to include in each test as many of the different number combinations as possible.[1]

(b) Edmonton Public School Board Tests

The Edmonton battery includes standardized tests which are administered at the end of each academic year to give the teacher some measure of comparability of achievement at the system level. Some of these tests have been developed outside the Edmonton System and have been adapted for local use. These tests include the Seeing Through Arithmetic Tests; STAT 4, STAT 5 and STAT 6 based on the textbooks in the Scott-Foresman series, the Van Wagenen Unit Scale of Attainment Reading Comprehension Tests at the grade four and six level and the California Reading Test, Elementary, form BB, Grades 4-5-6 devised by E.W. Tiegs and W.W. Clark.

The remainder of the tests have been created by committees within the Edmonton System. These tests include the Elementary Science Tests, Edmonton Public Schools, Form B at the

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[1] Ibid., pp. 69-70.

grade four, five and six levels and the Edmonton Social Studies Test, elementary, form A at the grade six level. The Edmonton Spelling Ability Tests were used but the results were disregarded because of a lack of consistency in their administration in the experimental and control groups.

These tests were chosen for the following reasons:

1. Results in the Edmonton tests in arithmetic and reading could be compared with results achieved in the comparable Iowa tests.

2. These tests give a wider and more comprehensive picture of academic achievement. The Edmonton tests in social studies and science measure content subjects while the Iowa tests measure the basic intellectual skills.

3. The Edmonton tests are more closely geared to the Edmonton curriculum. It is extremely difficult to construct standardized tests in content subjects because of the lack of agreement on curriculum practices in different systems. Most school systems construct their own tests for such subjects as social studies and science based on the curriculum developed in the system. The S.T.A. tests, although developed outside Edmonton, are based on the S.T.A. textbooks which form the base of the Edmonton curriculum in arithmetic.

4. Tests are available in all schools and can be administered with comparative ease within the school system.

(1) California Reading Test, Elementary, Grades 4, 5, 6, form BB, devised by Ernest W. Tiegs and Willis W. Clark.

In the Fourth Mental Measurements Yearbook, J.C. Flanagan states:

> An examination of test items suggests that they should do fairly well in discriminating between individuals with respect to their knowledge of vocabulary and ability to comprehend what they read.[1]

He also adds that though the test might suffer from a lack of detailed technical information regarding its construction that it was a valuable tool in appraising the progress of pupils with respect to the important skills of vocabulary and reading comprehension.

James R. Hobson,[2] praises the California Reading Tests as, "a well thought-out series of tests which deserve wide use". He considers the following as strong features in the

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[1] J.C. Flanagan, California Reading Test, Fourth Mental Measurements Yearbook, ed. O.K. Buros, (New Jersey: The Gryphon Press, 1953), pp. 568-70.

[2] James R. Hobson, California Reading Test, Fourth Mental Measurements Yearbook, ed. O.K. Buros, (New Jersey: The Gryphon Press, 1953).

test:

1. The reading skills measured are among the most important ones we strive to develop.
2. Test materials are representative of material encountered in daily school work.
3. Manual and scoring system are practical and effective.

The following are features which Hobson considers weaken the test:

1. Inadequate proof of validity.
2. Grade ranges for each test are too wide.
3. Little said in the way of suggestion as to what to do about class weaknesses disclosed by analysis.
4. Certain features in the outline of directions.

Reliability and Validity

The manual prepared by Tiegs and Clark shows the following table of reliability coefficients and standard errors of measurement:[1]

The indices of reliability have been determined by averaging the intercorrelations of the different forms of the

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[1]Ernest W. Tiegs and Willis W. Clark, Manual: California Reading Test, (Los Angeles: California Test Bureau, 1950), p. 4.

test for a single grade range.

TABLE III

COEFFICIENTS OF RELIABILITY AND STANDARD ERRORS OF MEASUREMENT FOR THE CALIFORNIA READING TEST

Test	Reliability	S.E. Measurement
Reading Vocabulary . .	.88	0.50
Reading Comprehension. .	.93	0.39
Total Reading	.93	0.39

Tiegs and Clark claim that all levels and forms of the California Test series possess a high degree of validity. The authors report that items have been developed over a period of years and through four editions, that a large number of items were tried out in widely separated geographic areas of the U.S.A. and that many studies, with few exceptions, have repeatedly vindicated the value of the individual items comprising the various tests.[1]

Organization of the Test

The test is divided into two sections: reading vocabulary and reading comprehension. The test on vocabulary is

[1] Ibid.

divided into sections which test word form, word recognition, meaning of opposites and meaning of similarities. The test in reading comprehension measures the pupil's ability in following directions, his familiarity with the skills needed for reference and library research and his skill in interpretation of meanings.

(2) Van Wagenen Unit Scale of Attainment Reading Comprehension Tests

The tests are concerned with silent reading comprehension. The expectation is that each pupil will complete the test within a forty-five minute period. In this way an attempt is made to measure maximum power of comprehension relatively uninfluenced by speed of reading. The tests are meant to test the following aspects of comprehension: ability to identify the general sense of the paragraph, ability to determine whether a definite idea is stated, ability to identify details in a paragraph and the ability to make simple inferences from the material presented in the paragraph. The multiple-choice technique is employed throughout the test with a layout that is favorable for rapid scoring. The directions for administering and scoring the tests are simple and clear.

Wrightsone,[1] writing in the Nineteen Forty Mental Measurements Yearbook states that in his opinion that though some items of the test provide an index of the ability of pupils to make inferences that most of the items require only superficial inferences. Another weakness pointed to was the failure to provide a measure for such aspects of reading comprehension as reading to understand directions, to predict the outcome of events, to summarize ideas or to apply these ideas to the solution of a problem.

Wrightsone also points to the fact that there is no evidence of the validity or validation procedures for these tests, except general statements in the manual.

He concludes his review by stating that the tests are valuable for survey purposes but do not seem to be especially valuable for diagnostic purposes and that in general that when compared with other reading comprehension tests it provided as valid a measure of selected aspects of reading comprehension as any other test.

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[1] J. Wayne Wrightsone, Unit Scales of Attainment in Reading, The Nineteen Forty Mental Measurements Yearbook, ed. O.K. Buros, (New Jersey: Highland Park, 1941), pp. 378-79.

Booker,[1] agrees with Wrightsone that the reading scales should be recognized as instruments primarily for general survey purposes rather than for diagnosis. He also has the same qualms as Wrightsone regarding the validity of the tests but feels that the reliability of the tests is favorable and that they have been sufficiently well standardized and carefully scaled so that they may be used with considerable assurance.

Booker feels that a few of the items could be improved and that the test would be strengthened if it were carefully re-edited. He praises the tests from the standpoint of objectivity and ease of scoring but feels that the explanations and directions for interpreting the tests leave much to be desired with respect to both accuracy in detail and clarity of statement. Booker concludes by again emphasizing that where a general survey of reading comprehension is desired the Unit Scale of Attainment in Reading should prove quite satisfactory.

(3) Seeing Through Arithmetic Tests

The tests STAT 4, STAT 5 and STAT 6 were devised by

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[1] Ivan A. Booker, Unit Scales of Attainment in Reading, The Nineteen Forty Mental Measurements Yearbook, ed. O.K. Buros, (New Jersey: Highland Park, 1941), pp. 377-78.

the authors of the Seeing Through Arithmetic textbooks published by the Scott, Foreman and Company. The tests consist of a series of multiple-choice questions which are designed to test all aspects of pupils' competence in arithmetic. To accomplish this each test has six parts. Parts 1, 3 and 4 are concerned with problem solving. Part 2 is concerned solely with computation, Part 5 with arithmetic information and Part 6 with basic concepts.

The S.T.A. tests were administered only to pupils who had taken the S.T.A. course during the 1962-63 term. The S.T.A. courses were introduced gradually into the Edmonton system, thus creating a situation where pupils writing the S.T.A. tests at any grade level would have different degrees of preparation. Some pupils who wrote the grade six test had been in the program only one year while at the other extreme there were pupils who had been offered S.T.A. courses at the grade three, four and five levels. The accelerated pupils had the most intensive training in the S.T.A. program because the schools that adopted the Continuous Progress Plan first tended also to be the first to introduce the S.T.A. program.

A set of percentile norms and medians were calculated on the results of Grade four, five and six pupils in the Edmonton System.

(4) Elementary Science Tests, Edmonton Public Schools

Science tests were created by an Elementary Science Committee under the chairmanship of N.E. Lougheed. These tests were designed to cover the content of Science Bulletin 2b. A separate test, made up of multiple-choice questions, was prepared for grades four, five and six. The original tests were submitted to a random sample of schools. These tests were used for an item analysis. The committee deleted unacceptable questions and produced a revised set of tests which are now in use in the Edmonton Public School System.

The committee attempted to achieve validity by ensuring that each question was related to the curriculum, that each question related to a topic which could be found in one of the recommended references and by placing a great degree of reliance on the judgment of the best and most experienced teachers. No test of reliability was administered.

A set of percentile norms and medians were calculated on the results of grade four, five and six pupils in the Edmonton System.

(5) Edmonton Social Studies Tests

The Edmonton Social Studies Tests were developed by a Social Studies Committee under the chairmanship of

N.H. Cuthbertson. These tests were designed to cover the content of Bulletin 2, 1952. Part I of the test is based on the theme, "People Around the World", while Part II is based on the theme, "Canadian Heritage".

Items were checked with the course outline, an item analysis was carried out and the advice of expert teachers was sought. The chairman submitted the test to random samples of pupils in grades four, five and six and found that the grade six pupils achieved significantly better scores than the two lower grades.

Percentile ranks and median scores were developed on performance of 2310 grade six pupils tested in May, 1956.

TESTING PROCEDURE

(a) Administration of the Iowa Tests of Basic Skills

350 booklets were collected from the West Jasper Place School Board, the Department of Education and the Edmonton Public School Board. The testing population of 796 pupils was divided by schools into three groups and the test booklets were delivered to each section at the beginning of a week and collected at the end. The testing took place between May 13, 1963 and May 30, 1963.

Tests were administered by the principal or classroom teachers. I.B.M. answer sheets were used. These sheets were collected and machine-marked at the Department of Education. 100 sheets were re-marked manually to check the accuracy of the machine-marked scores. Unusual scores were also rechecked.

(b) Administration of the E.P.S.B. Tests

These tests were administered by classroom teachers in the latter part of May and the first week in June. Tests were marked by teachers and the raw scores were recorded and mailed to the writer.

TREATMENT OF DATA

All data and the results of all tests were recorded on appropriate sheets. Raw scores achieved by all matched pairs were recorded and differences in the score of each pair on each test was calculated and recorded. The squares of these differences were also calculated and recorded. The variance of the differences and the mean of the differences were determined. The significance of the difference between two means was tested by the conventional "t" test of significance at the accepted one per cent and five per cent levels.

Analysis of the data from the above calculations was made.[1]

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[1]George A. Ferguson, Statistical Analaysis in Psychology and Education, (Toronto: McGraw-Hill Book Company, Inc., 1959), p. 139.

CHAPTER IV

ANALYSIS OF DATA

GENERAL DESCRIPTION OF THE EXPERIMENTAL AND CONTROL GROUPS

A description of the groups of matched pairs participating in this experiment is presented in Table I.

Table I includes the number of pupils in each group, the mean I.Q. and mean age of each group and their socio-economic distribution of School locale.

GROUP RESULTS ACHIEVED ON THE IOWA TESTS OF BASIC SKILLS

Mean scores and available percentile ratings achieved by each group on each of the Iowa tests are found in Table IV. Raw scores were used to determine all means. Percentile norms were determined by the Jasper Place Public School District based on the results of tests which were administered in February, 1963.

GROUP RESULTS ACHIEVED ON THE EDMONTON BATTERY OF ACHIEVEMENT TESTS

Mean scores and available percentile standings are presented in Table V. Percentile standings have been determined by the Edmonton Public School Board using samples of

Edmonton pupils.

COMPARISON OF RESULTS ACHIEVED BY MATCHED PAIRS IN EXPERIMENTAL AND CONTROL GROUPS

This section will test the four major hypotheses in this study. Significance is tested by comparing the difference between two means for correlated samples.[1] The difference in scores of matched pupils is determined and this difference is squared. The mean of the differences and the sum of the squares of the differences is calculated, then the variance of the differences is determined by the formula:

$$S_D^2 = \frac{\sum D^2}{N} - \bar{D}^2$$

The appropriate t ratio is obtained by dividing the mean of the differences by the standard deviation of the differences.

$$t = \frac{\bar{D}}{\sqrt{S_D^2 / N-1}}$$

The number of degrees of freedom used in evaluating t is one less than the number of pairs of observations or N - 1.

A positive mean difference indicates C.P.P. superiority while

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[1] George A. Ferguson, Statistical Analysis in Psychology and Education. (Toronto: McGraw-Hill Book Company, Inc., 1959) p. 139.

TABLE IV

SUMMARY OF THE GROUP RESULTS ON THE IOWA TEST OF BASIC SKILLS

	Vocabulary			Reading Comprehension			Language Skills			Arithmetic Skills		
Group	N	Mean Score	%ile Rating	N	Mean Score	%ile Rating	N	Mean Score	%ile Rating	N	Mean Score	%ile Rating
C.P.P. 4/6	112	26.9	65	114	45.9	60	111	93.6		112	44.8	62
Graded 4g	112	27.8	69	114	46.7	60	111	95.2		112	44.6	62
C.P.P. 5/6	87	33.3		89	54.4		87	106.4	71	90	49.3	
Graded 5g	87	32.1		89	52.2		87	101.9	65	90	49.9	
C.P.P. 4/5	75	33.9		73	55.8		73	112.4	80	75	54.4	
Graded 5gg	75	36.9		73	58.6		73	119	87	75	55.9	
C.P.P. 5/5	61	39.5	32	64	56.1	80	65	120.5		65	55.9	75
Graded 6g	61	40.7	87	64	58.1	83	65	121.7		65	59.6	84

TABLE V

SUMMARY OF THE GROUP RESULTS ON THE E.P.S.B. ACHIEVEMENT TESTS

	Reading			Arithmetic			Science			Social Studies		
Group	N	Mean Score	%ile Rating	N	Mean Score	%ile Rating	N	Mean Score	%ile Rating	N	Mean Score	%ile Rating
4/6	112	28.8	59	91	66.5	48	115	33.5	53			
4g	112	30.0	65	91	64.7	42	115	31.6	43			
5/6	79	111.9	63				79	60.1	68			
5g	79	113.2	67				79	60.1	68			
4/5	59	114.4	71	38	72.1	70	61	60.5	69			
5gg	59	117.4	81	38	73.2	75	61	62.1	73			
5/5	65	32.1	75	32	74.5	87	60	93.7	77	63	97.4	74
6g	65	33.0	80	32	72.5	82	60	96.4	81	63	102.9	85

a negative mean difference indicates that the graded group has scored higher.

(a) Comparison of Results Achieved by Matched Pairs in Groups 4/6 and 4g

The hypothesis that there is no significant difference in the academic achievement between pupils in the fourth year of the six-year program (4/6) and matched pupils in grade four (4g) in the graded system is tested by comparing the performance of each group of pupils on the Iowa battery of Basic Skills and the Edmonton set of achievement tests.

The analysis of the data is presented in Table VI. No significant differences were found in mean performance between the matched groups of pupils on the Iowa battery. Significant differences were found in mean performances between the matched pairs in reading and in science, in the Edmonton set of tests. A significant difference at the .05 level of confidence in science favored the 4/6 group and a similar significant difference in reading favored the 4g pupils. There was no significant difference in achievement in arithmetic.

(b) Comparison of Results Achieved by Matched Pairs in Groups 5/6 and 5g

The hypothesis that there is no significant difference in academic achievement between pupils in the fifth year of the six-year program (5/6) in the C.P.P. and matched pupils in grade five (5g) in the Graded system is tested by comparing the performance of each group of pupils on the Iowa Battery of Basic Skills and the Edmonton Set of Achievement Tests.

The analysis of the data is presented in Table VII.

(c) Comparison of Results Achieved by Matched Pairs in Groups 4/5 and 5gg

The hypothesis that there is no significant difference in academic achievement between pupils in the fourth year of the five-year program (4/5) in the C.P.P. and matched pupils in grade five (5gg) in the graded system is tested by comparing the performance of each group of pupils on the Iowa Battery of Basic Skills and the Edmonton Set of Achievement tests.

The analysis of the data is presented in Table VIII. Graded pupils in the control group scored significantly higher (.01 level) in the Iowa tests in vocabulary, reading comprehension and language skills, but were not significantly

different on the Iowa arithmetic or any of the Edmonton tests.

(d) Comparison of Results Achieved by Matched Pairs in Groups 5/5 and 6g

The hypothesis that there is no significant difference in academic achievement between pupils in the fifth year of the five-year program in the C.P.P. and matched pupils in grade six (6g) in the graded system is tested by comparing the performance of each group of pupils on the Iowa Battery of Basic Skills and the Edmonton Set of Achievement tests.

The analysis of the data is presented in Table IX. Pupils in the 6g group attained significantly higher scores on the Iowa arithmetic (.01 level) and the Edmonton Social Studies test (.05 level), but there was no significant difference on the Iowa vocabulary, reading comprehension, language skills or the Edmonton tests in reading, science, and arithmetic.

(e) Summary of Results

Table X shows a summary of the tests of significance of mean differences for each test and also indicates the group that achieved the higher scores. A positive mean score indicates C.P.P. superiority.

The conclusions and implications drawn from the findings in this chapter are discussed in Chapter V.

TABLE VI

COMPARISON OF RESULTS ACHIEVED BY MATCHED PAIRS IN GROUPS 4/6 AND 4g

	Iowa Vocab.	Iowa Reading Comp.	Iowa Lang. Skills	Iowa Arith. Skills	Edmonton Unit Scale Reading	Edmonton S.T.A. Arith.	Edmonton Science
N	112	114	111	112	112	91	115
Mean Difference $\bar{D}$	- .85	- .77	- 1.64	.12	- 1.31	1.73	1.81
Variance of the Differences S_D^2	42.61	144.67	409.38	114.83	30.11	154.05	57.23
"t" Score	1.37	.68	.12	.85	2.54	1.32	2.55
test of significance	N.S.D.	N.S.D.	N.S.D.	N.S.D.	.05 (4g)	N.S.D.	.05 (4/6)

TABLE VII

COMPARISON OF RESULTS ACHIEVED BY MATCHED PAIRS IN GROUPS 5/6 AND 5g

	Iowa Vocab.	Iowa Reading Comp.	Iowa Lang. Skills	Iowa Arith. Skills	Edmonton "California" Reading	Edmonton Science
N	87	89	87	90	79	79
Mean Difference $\overline{D}$	1.24	2.30	4.40	- .62	- 1.33	- .03
Variance of the Differences S_D^2	71.72	150.28	451.54	117.64	136.46	284.53
"t" Score	1.36	1.75	1.92	.54	1.00	.016
test of significance	N.S.D.	N.S.D.	N.S.D.	N.S.D.	N.S.D.	N.S.D.

TABLE VIII

COMPARISON OF RESULTS ACHIEVED BY MATCHED PAIRS IN GROUPS 4/5 AND 5gg

	Iowa Vocab.	Iowa Reading Comp.	Iowa Lang. Skills	Iowa Arith. Skills	Edmonton "California" Reading	Edmonton S.T.A. Arith.	Edmonton Science
N	75	73	73	75	59	38	61
Mean Difference $\bar{D}$	-2.67	-2.82	-6.55	-1.47	-2.66	-1.13	-1.64
Variance of the Differences S_D^2	37.54	45.61	377.39	56.87	107.99	144.25	256.56
"t" Score	3.76	3.57	2.86	1.67	1.94	.57	.78
test of significance	.01 (5gg)	.01 (5gg)	.01 (5gg)	N.S.D.	N.S.D.	N.S.D.	N.S.D.

TABLE IX

COMPARISON OF RESULTS ACHIEVED BY MATCHED PAIRS IN GROUPS 5/5 AND 6g

	Iowa Vocab.	Iowa Reading Comp.	Iowa Lang. Skills	Iowa Arith. Skills	Edmonton Unit Scale Reading	Edmonton S.T.A. Arith.	Edmonton Science	Edmonton Social Studies
N	61	64	65	65	65	32	60	63
Mean Difference $\bar{D}$	- 1.25	- 2.02	-1.15	- 3.67	- .94	2.00	- 2.73	- 5.51
Variance of the Differences S_D^2	32.62	116.12	270.91	91.28	17.81	174.44	227.77	393.72
"t" Score	1.69	1.49	.56	3.08	1.77	.84	1.39	2.15
test of significance	N.S.D.	N.S.D.	N.S.D.	.01 (6g)	N.S.D.	N.S.D.	N.S.D.	.05 (6g)

TABLE X

SUMMARY OF TESTS OF SIGNIFICANCE OF MEAN DIFFERENCES BETWEEN GROUPS OF MATCHED PAIRS

TESTS	4/6 and 4g		5/6 and 5g		4/5 and 5gg		5/5 and 6g	
	$\bar{D}$	sig.	$\bar{D}$	sig.	$\bar{D}$	sig.	$\bar{D}$	sig.
Iowa Vocabulary	-	N.S.D.	+	N.S.D.	-	.01	-	N.S.D.
Iowa Reading Comprehension	-	N.S.D.	+	N.S.D.	-	.01	-	N.S.D.
Iowa Language Skills	-	N.S.D.	+	N.S.D.	-	.01	-	N.S.D.
Iowa Arithmetic Skills	+	N.S.D.	-	N.S.D.	-	N.S.D.	-	.01
E.P.S.B. Reading	-	.05	-	N.S.D.	-	N.S.D.	-	N.S.D.
E.P.S.B. Arithmetic	+	N.S.D.			-	N.S.D.	+	N.S.D.
E.P.S.B. Science	+	.05	-	N.S.D.	-	N.S.D.	-	N.S.D.
E.P.S.B. Social Studies							-	.05

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

Careful analysis and study of the data led to certain conclusions and opinions. These conclusions together with some opinions will be presented as they relate to each of the tested hypotheses.

HYPOTHESIS I

> There is no significant difference in academic achievement between pupils in the fourth year of the six-year program (4/6) in the C.P.P. and matched pupils in grade four (4g) in the Graded system.

On the basis of the evidence, Hypothesis I is accepted. One test showed a significant difference in favor of the graded group, another test showed a significant difference in favor of the C.P.P. group. Five tests showed no significant difference. Neither scheme of organization shows clear superiority in the battery of tests which were administered.

It is interesting to note that the pupils in the 4g group did better in vocabulary, reading and language in the Iowa battery and significantly better in reading in the Edmonton test, while the 4/6 group did better in the Iowa arithmetic and the Edmonton arithmetic and science. This type of

performance might be explained by a difference in subject emphasis in each of the schools. It might also be the result of such factors as teacher competence, specialized training or special interest in either the language arts or the arithmetic-science field.

HYPOTHESIS II

> There is no significant difference in academic achievement between pupils in the fifth year of the six-year program (5/6) in the C.P.P. and matched pupils in grade five (5g) in the graded system.

It is concluded that because all tests show no significant difference in performance that Hypothesis II cannot be rejected. Neither type of organization appears to show superiority in academic achievement as tested by the Iowa and Edmonton battery of tests.

HYPOTHESIS III

> There is no significant difference in academic achievement between pupils in the fourth year of the five-year program (4/5) in the C.P.P. and matched pupils in grade five (5gg) in the Graded system.

On the basis of the evidence, it is difficult to say whether one can or cannot reject Hypothesis III. Three of the tests showed a significant difference in favor of the graded pupils while four tests showed no significant difference.

While it may not be possible to clearly reject Hypothesis III, it should be noted that in addition to the three tests showing significant differences favoring the graded group that the mean difference in the four tests also showed that the graded class scored higher.

If we assume that the presentation and content covered by both groups has been basically similar than it would appear that the additional year in the graded program has played a part in the higher scores obtained by this group. Repetition, extra drill, a longer period for assimilation of facts and generalization coupled with a greater degree of maturation and mental age has possibly had an influence in scores achieved in the various tests. The additional year of exposure to reading material and opportunity for reading in and out of school could also have influenced the scores in reading.

Another possibility is that the content covered by each group might not be the same. There is always the danger that in the accelerated program, because of the time factor, some parts of the course of studies might be eliminated or skimmed. Poor planning could result in a "jamming" of units in the latter part of the year in order to meet deadlines.

HYPOTHESIS IV

There is no significant difference in academic achievement between pupils in the fifth year of the five-year program (5/5) in the C.P.P. and matched pupils in grade six (6g) in the Graded system.

The data in Table IX indicate that no significant differences were found in the results obtained on the Iowa vocabulary, reading comprehension and language skills tests, as well as the Edmonton tests in reading, arithmetic and science.

Pupils in the 6g group showed significantly higher scores in the Iowa tests of arithmetic skills. This difference can be partially explained by the fact that the Iowa tests are based on a more traditional approach to mathematics. This traditional bias in the Iowa tests should favor pupils in the 6g group because there were three times as many pupils taking traditional mathematics in this group as compared to the 5/5 group. C.P.P. schools were quicker to introduce the S.T.A. course with its bias towards modern mathematics than were graded schools. It seems quite probable that part of the superiority of the 6g group could be due to better preparation for a test based on the traditional approach to mathematics. The results on the S.T.A. tests which favor the 5/5 pupils further support this line of reasoning.

The difference in scores on the Social Studies test also favored the graded group significantly. This superiority might be the result of gaps in presentation due to acceleration. Whereas reading, arithmetic and spelling were presented separately to the accelerated groups, social studies was presented to the class as a whole. Thus, accelerated pupils would miss portions of the course of study that had been presented to the graded pupils. This omission might account for part of the superiority of the graded pupils in 6g.

On the basis of the evidence, it would appear that Hypothesis IV cannot be rejected and that there is no clear indication of superiority between the two groups tested. It is interesting to note that although the graded students in 6g are still superior on the basis of mean scores that the differences are not significant except in the Iowa test in arithmetic and the Edmonton test in Social Studies. The additional year of maturation may have closed the gap in achievement between the accelerated and graded groups.

The maturation or time factor may also be presented in another way. Pupils in the 5gg have gone to school five years in c omparison to four years for 4/5 pupils in the C.P.P. This represents an advantage of 25% in actual days of school

experience and days of extracurricular experience based on and influencing skills mastered in the school system. Pupils in the 6g group have only a 20% advantage over 4/5 pupils. Following this reasoning it is obvious that for each additional year of schooling the time factor is continually reduced and should have less influence on academic achievement. This conclusion is borne out by research referred to in Chapter II which shows that at the junior and senior high school levels accelerants fare as well or better than non-accelerants in academic achievement.

SUMMARY OF CONCLUSIONS

On the basis of the test results on the Iowa and Edmonton batteries, the average pupils in the C.P.P. showed no difference in achievement from that of their matched counterparts in the Graded Plan. This study would indicate that the C.P.P., at its present stage, has probably had little influence on academic achievement for the majority of pupils in the average range.

The results of the tests administered to superior pupils indicate that those youngsters who completed five years in the Graded Program gained higher scores on the achievement batteries

than their matched partners who had completed the same program in four years in the C.P.P. It should be noted that though the C.P.P. pupils spent a full year less in school than the Graded pupils, that four of the seven tests showed no significant differences and that the three tests which showed significance were based on results of tests of basic skills, which are probably correlated closer to mental age than the local tests based on the Edmonton curriculum. It would appear that acceleration has not had an adverse effect on the achievement of pupils at the end of the fourth year of the C.P.P.

It should also be noted that if the criterion of success of the C.P.P. plan for superior pupils is full equality between the two groups in spite of the age difference between them, then the results of the achievement batteries could be viewed differently. It would appear that the difference in scores favoring the grade fives in the Graded Plan is sufficient to indicate that these pupils have definitely gained greater achievement in five years than their matched counterparts in the C.P.P. have in four.

There was no significant difference in performance between the superior pupils in the fifth year of the five-year program in the C.P.P. and matched sixth-grade pupils in the

Graded Plan in six of the eight tests administered. Superiority in the Iowa arithmetic test can be partially explained by the fact that the graded pupils had a more intensive training in traditional arithmetic and superiority in Social Studies might be partially due to the fact that accelerated pupils skipped parts of the curriculum. On the basis of the testing it must be concluded that there was little or no difference in achievement despite that fact the pupils in the C.P.P. had attended school one year less than the Graded classes.

IMPLICATIONS

Average pupils in the C.P.P. showed no difference in achievement from that of their matched counterparts in the Graded Plan. This result is not too surprising as research findings indicate that homogeneous grouping taken by itself seldom guarantees superior academic achievement. Research does indicate that where homogeneous grouping has produced favorable gains in academic achievement that this grouping has been accompanied by such factors as curriculum adaptation and differentiated teaching methods. If the C.P.P. is to produce a higher level of academic achievement for the large bulk of pupils included between the slowest and the superior, it would

appear that teachers and administrators must concentrate on the correct and effective use of curriculum and teaching methods for this group rather than on the supposition that the organizational structure will in itself produce improvement.

A need for differentiation of techniques and curricula at each level was reiterated by most principals who took part in the experiment. There is considerable evidence to indicate that many teachers use the same techniques and material for each group that they teach. There is a need for organizing, printing and distributing curricula and suggested techniques for each group. This type of guide-line is not only necessary for experienced teachers but absolutely essential to the many new teachers who are most often placed in the middle grades of the elementary school. Coupled with some concrete directions, there is a need for continual discussion, experimentation and evaluation of methods and curricula for each group.

Test results indicate that superior pupils in the C.P.P. have completed the elementary program in five years with little or no difference in academic achievement when compared with matched pupils who have attended elementary school for six years. It would appear that the academic achievement

of accelerated superior pupils in the C.P.P. has proven to be adequate. These results indicate that the C.P.P. is an organizational scheme which can save a pupil one year of schooling at the elementary level and still provide instruction which will enable the accelerated pupil to maintain standards of academic achievement which are not significantly different from that of comparable pupils who remain in the elementary program six years.

Higher achivement might be gained by placing greater emphasis on the adaptation and development of suitable curriculum and teaching methods for this group. Research also indicates that teacher placement combined with departmentalization or some degree of teacher specialization might prove especially beneficial to superior pupils.

RECOMMENDATIONS FOR FURTHER STUDY

This study is the second which has attempted to analyze and evaluate aspects of the Continuous Progress Plan in Edmonton. Further studies are necessary and the following are presented for consideration:

1. A study which would measure the effect of participation in the Continuous Progress Plan on personal and social development.

2. A study which would determine what parents and the general public think of the Continuous Progress Plan.
3. A study which would evaluate to what extent present methods and curricula in the C.P.P. provide differentiated instruction to each of the groups in the different programs.
4. Studies which would develop specific methods and curricula for each of the groups and evaluate the effectiveness of these new programs.
5. A study which would determine the effect of transferring pupils from one group to another at all levels of the C.P.P.
6. An assessment of the slow group in the seven-year program of the C.P.P. The evaluation of this aspect of the C.P.P. is of great importance, particularly to the growing faction in educational circles that have pointed to the small returns to be gained in academic achievement by repetition of grades.
7. It would be interesting to follow the two accelerated groups and their matched counterparts through the intermediate and senior grades to see if the difference in academic achievement would continue to diminish as it did in this study. Further evaluation of all pupils in the C.P.P.

at higher grade levels would appear to be necessary to gain a more complete picture of the effect of grouping and acceleration in the elementary grades.

8. A study to determine whether elementary teachers are more effective in teaching all subjects to a group or whether they are more effective in teaching a narrower range of subjects.

9. A study which would determine the effect of grouping and acceleration in the C.P.P. on pupils' motivation and habits of work.

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APPENDIX A

TESTING INSTRUMENTS

Maurice L. Hartung
Henry Van Engen
E. Glenadine Gibb
Lois Knowles

STAT 4

Seeing through arithmetic test

Scott, Foresman and Company Chicago, Atlanta, Dallas, Palo Alto, Fair Lawn, N.J.

Part	Number correct
Problem solving: Selecting answers	1
Computation	2
Problem solving: Selecting equations	3
Problem solving: Solving equations	4
Information	5
Concepts	6
Total	

Pupil

Teacher

Grade

Date

Part 1 *Problem solving: selecting answers*

Sample Betty has 32 shells. Ann has 25 shells. Ann has how many fewer shells than Betty?

- ☐ 57
- ☐ 17
- ☒ 7
- ☐ Answer is not given.

Sample Jack had 19 marbles. He lost 7 of them. Jack has how many marbles left?

- ☐ 26
- ☐ 17
- ☐ 7
- ☐ Answer is not given.

A David has 84 marbles. Bill has 65 marbles. David has how many more marbles than Bill?

- ☐ 149
- ☐ 29
- ☐ 19
- ☐ Answer is not given.

B Mr. March sold 93 of his 128 pigs. How many pigs did he have left?

- ☐ 40
- ☐ 35
- ☐ 45
- ☐ 34
- ☐ Answer is not given.

C Carol picked 36 flowers. She gave some to her teacher and then found that she had 27 flowers left. How many flowers had she given to her teacher?

- ☐ 63
- ☐ 11
- ☐ 9
- ☐ Answer is not given.

D June earned $.60 one Saturday and $.45 another Saturday. How much in all did she earn on these two days?

- ☐ $1.05
- ☐ $1.15
- ☐ $.15
- ☐ Answer is not given.

E Jim put 45 lb. of apples in bags. He put 5 lb. of apples in each bag. How many bags did he use?

- ☐ 50
- ☐ 40
- ☐ 8
- ☐ Answer is not given.

F Mr. Sharp bought 15 cameras for his store. He now has 28 cameras in his store. How many cameras did he have before he bought the 15?

- ☐ 23
- ☐ 13
- ☐ 43
- ☐ 58
- ☐ Answer is not given.

G Mr. March sold 60 lb. of apples. Then he found that he still had 110 lb. of apples. How many pounds of apples did he have before he sold the 60 lb.?

- ☐ 230
- ☐ 170
- ☐ 50
- ☐ Answer is not given.

Go on to the next page.

H Mr. Turner gave 39 pennies to 3 children. The children shared the pennies equally. How many pennies did each child get?

- ☐ 36
- ☐ 42
- ☐ 12 and 3 left over
- ☐ 13
- ☐ Answer is not given.

I Bill bought 2 packages of notebook paper at 28¢ each. How much did the two packages cost in all?

- ☐ 56¢
- ☐ 26¢
- ☐ 14¢
- ☐ Answer is not given.

J Mr. March had 72 bu. of potatoes. He bought some more, and then he had 160 bu. How many bushels of potatoes did he buy?

- ☐ 232
- ☐ 98
- ☐ 88
- ☐ Answer is not given.

K Tony put $1.35 he had earned in his bank. Then he had $5.10 in his bank. How much money was in Tony's bank before he put in the $1.35?

- ☐ $6.45
- ☐ $3.75
- ☐ $3.85
- ☐ Answer is not given.

L Dick took some bottles back to the store. They were worth 2¢ each, and the clerk gave Dick 36¢. How many bottles did Dick take back?

- ☐ 72
- ☐ 38
- ☐ 18
- ☐ Answer is not given.

M Jack bought a package of stamps. He gave 72 of them to his brother. When he counted the stamps he had left, he found that he had 182. How many stamps were in the package to begin with?

- ☐ 110
- ☐ 254
- ☐ 154
- ☐ Answer is not given.

N A camera that Don wants to buy costs $9.50. He has saved $4.05. How much more money does he need before he can buy the camera?

- ☐ $5.45
- ☐ $13.55
- ☐ $5.55
- ☐ Answer is not given.

O 104 boys are playing ball. There are 8 teams, with the same number of boys on each team. How many are on each team?

- ☐ 23
- ☐ 13
- ☐ 96
- ☐ 112
- ☐ Answer is not given.

☐ *Number correct Part 1*

Part 2 *Computation*

Sample 268 − 260 = ▒

- ☐ 108
- ☐ 18
- ☐ 528
- ☐ 8
- ☐ Answer is not given.

A 1438 + 6574 = ▒

- ☐ 8012
- ☐ 5036
- ☐ 7902
- ☐ 7912
- ☐ Answer is not given.

B 527 − 488 = ▒

- ☐ 49
- ☐ 139
- ☐ 38
- ☐ Answer is not given.

Go on to the next page.

C $32 + 88 + 73 =$

- ☐ 183
- ☐ 93
- ☐ 192
- ☐ 193
- ☐ Answer is not given.

D $450 - 19 =$

- ☐ 431
- ☐ 449
- ☐ 469
- ☐ 441
- ☐ Answer is not given.

E $999 + 21 =$

- ☐ 920
- ☐ 1110
- ☐ 1120
- ☐ 1020
- ☐ Answer is not given.

F $8000 - 749 =$

- ☐ 7251
- ☐ 8749
- ☐ 7361
- ☐ 8251
- ☐ Answer is not given.

G $13 + 248 + 9 =$

- ☐ 269
- ☐ 257
- ☐ 270
- ☐ 260
- ☐ Answer is not given.

H $6521 - 5833 =$

- ☐ 798
- ☐ 1798
- ☐ 1688
- ☐ 688
- ☐ Answer is not given.

I $135 \div 5 =$

- ☐ 130
- ☐ 26
- ☐ 27
- ☐ 25
- ☐ Answer is not given.

J $24 \times 79 =$

- ☐ 1666
- ☐ 1896
- ☐ 474
- ☐ 1866
- ☐ Answer is not given.

K $69 \div 4 =$

- ☐ 17
- ☐ 16 and 5 remainder
- ☐ 17 and 1 remainder
- ☐ 18
- ☐ Answer is not given.

L $117 \div 9 =$

- ☐ 13
- ☐ 108
- ☐ 126
- ☐ 14
- ☐ Answer is not given.

M $8 \times 439 =$

- ☐ 3503
- ☐ 3442
- ☐ 3212
- ☐ 3512
- ☐ Answer is not given.

N $240 \div 16 =$

- ☐ 224
- ☐ 30
- ☐ 15
- ☐ 256
- ☐ Answer is not given.

O $401 \times 306 =$

- ☐ 122706
- ☐ 12546
- ☐ 1530
- ☐ Answer is not given.

☐ *Number correct Part 2*

Part 3 *Problem solving: selecting equations*

Sample Ann's mother needs 15 candles for a birthday cake. There are 5 candles in a box. How many boxes of candles does she need?

- ☐ 15 − 5 = ▪
- ☐ 15 + 5 = ▪
- ☐ 15 ÷ 5 = ▪
- ☐ Equation is not given.

A Don had $3.15 in his bank. He earned $.85 and put that in his bank, too. How much money did he have in his bank then?

- ☐ $3.15 + $.85 = ▪
- ☐ $3.15 − $.85 = ▪
- ☐ $3.15 − ▪ = $.85
- ☐ Equation is not given.

B Mary has 48 chickens and 14 ducks. She has how many more chickens than ducks?

- ☐ 48 + 14 = ▪
- ☐ 48 − 14 = ▪
- ☐ 14 + ▪ = 48
- ☐ Equation is not given.

C Mr. Brown had 34 lambs. He sold 18 of them. How many lambs did he have then?

- ☐ 18 + ▪ = 34
- ☐ 34 + 18 = ▪
- ☐ 34 − ▪ = 18
- ☐ 34 − 18 = ▪
- ☐ Equation is not given.

D On Saturday Dick's father sold 32 dozen eggs. On Thursday he sold 43 dozen eggs. He sold how many fewer dozen eggs on Saturday than on Thursday?

- ☐ 32 + ▪ = 43
- ☐ 43 − 32 = ▪
- ☐ 43 − ▪ = 32
- ☐ Equation is not given.

E Mr. May bought 24 erasers and 48 pencils for the school store. He bought how many fewer erasers than pencils?

- ☐ 48 − 24 = ▪
- ☐ 48 − ▪ = 24
- ☐ ▪ + 24 = 48
- ☐ Equation is not given.

F Ellen had a dozen boxes. She planted 8 seeds in each box. How many seeds did she plant?

- ☐ 12 ÷ 8 = ▪
- ☐ 12 × 8 = ▪
- ☐ 8 + ▪ = 12
- ☐ Equation is not given.

G Mrs. Bell put 60 popcorn balls in bags. She put 5 in each bag. How many bags did she need?

- ☐ 60 ÷ ▪ = 5
- ☐ 60 ÷ 5 = ▪
- ☐ 60 × 5 = ▪
- ☐ Equation is not given.

H Mrs. Bell gave 36 new pennies to her 4 children. She gave each child the same number of pennies. How many pennies did each child get?

- ☐ 36 − ▪ = 4
- ☐ 36 × 4 = ▪
- ☐ 4 + ▪ = 36
- ☐ Equation is not given.

I Ellen sold 9 boxes of Brownie cookies for $4.50. For how much did she sell each box of cookies?

- ☐ 9 × $4.50 = ▪
- ☐ $4.50 − 9 = ▪
- ☐ $4.50 ÷ ▪ = 9
- ☐ Equation is not given.

J Jack had 60 baseball cards. After he had given some of them away, he still had 20 cards left. How many baseball cards had he given away?

- ☐ 20 + ▪ = 60
- ☐ 60 − 20 = ▪
- ☐ 60 − ▪ = 20
- ☐ ▪ − 20 = 60
- ☐ Equation is not given.

K A book that Dick wants to buy costs $2.30. He has $.75. How much more money does he need to buy the book?

- ☐ $.75 + ▪ = $2.30
- ☐ ▪ + $.75 = $2.30
- ☐ $2.30 + $.75 = ▪
- ☐ $2.30 − $.75 = ▪
- ☐ Equation is not given.

L Don had 15 science pictures. He took 9 of them to school and left the others at home. How many science pictures did he leave at home?

- ☐ 15 + 9 = ▪
- ☐ ▪ + 9 = 15
- ☐ 9 + ▪ = 15
- ☐ Equation is not given.

Go on to the next page.

M Tony sold 18 coins from his collection. Then he had 50 coins left. How many coins did he have before he sold the 18?

- ☐ 50 + 18 = ■
- ☐ 50 − 18 = ■
- ☐ ■ − 18 = 50
- ☐ 50 − ■ = 18
- ☐ Equation is not given.

N Tom gave 25 of his shells away. Then he had 85 shells left. How many shells did he have before he gave away the 25?

- ☐ ■ − 25 = 85
- ☐ 85 − 25 = ■
- ☐ 85 + 25 = ■
- ☐ Equation is not given.

O One day Mr. May bought 48 ice-cream bars for the school store. Then he had 80 bars. How many bars did he have before he bought the 48 bars?

- ☐ 80 − 48 = ■
- ☐ 48 + 80 = ■
- ☐ 48 + ■ = 80
- ☐ ■ + 48 = 80
- ☐ Equation is not given.

☐ *Number correct Part 3*

Part 4 *Problem solving: solving equations*

Sample 8 + 16 = ■

- ☐ 8
- ☐ 16
- ☐ 24
- ☐ None of these

A 48 ÷ 8 = ■

- ☐ 40
- ☐ 6
- ☐ 56
- ☐ None of these

B 846 + 739 = ■

- ☐ 1575
- ☐ 107
- ☐ 1585
- ☐ None of these

C 5400 − 5319 = ■

- ☐ 81
- ☐ 191
- ☐ 181
- ☐ 10719
- ☐ None of these

D 36 + ■ = 90

- ☐ 54
- ☐ 126
- ☐ 64
- ☐ None of these

E 15 ÷ ■ = 5

- ☐ 3
- ☐ 5
- ☐ 20
- ☐ 10
- ☐ None of these

F ■ + 8 = 48

- ☐ 56
- ☐ 48
- ☐ 6
- ☐ 40
- ☐ None of these

G 865 × 12 = ■

- ☐ 877
- ☐ 853
- ☐ 10280
- ☐ 9380
- ☐ None of these

H ■ − 10 = 500

- ☐ 510
- ☐ 590
- ☐ 490
- ☐ 5000
- ☐ None of these

I 500 − ■ = 410

- ☐ 910
- ☐ 90
- ☐ 110
- ☐ None of these

J 5010 − 4010 = ■

- ☐ 1010
- ☐ 9020
- ☐ 1000
- ☐ None of these

K ■ − 55 = 110

- ☐ 165
- ☐ 55
- ☐ 2
- ☐ None of these

Go on to the next page.

L $87 \div 3 = \square$

- ☐ 27
- ☐ 90
- ☐ 84
- ☐ 29
- ☐ None of these

M $6300 + \square = 6329$

- ☐ 12629
- ☐ 29
- ☐ 71
- ☐ None of these

N $\square + 28 = 62$

- ☐ 90
- ☐ 44
- ☐ 80
- ☐ 34
- ☐ None of these

O $300 - \square = 199$

- ☐ 201
- ☐ 101
- ☐ 499
- ☐ None of these

STOP

☐ *Number correct Part 4*

Part 5 *Information*

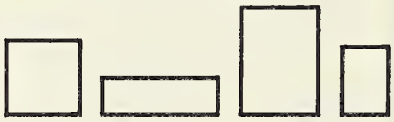
Sample Which is equal to 1 yard?

- ☐ 9 feet
- ☐ 30 inches
- ☐ 3 feet
- ☐ 12 inches
- ☐ None of these

A Which is the answer for 8×9?

- ☐ 89
- ☐ 17
- ☐ 81
- ☐ 72
- ☐ None of these

B Which name can you use for each picture below?



- ☐ Square
- ☐ Triangle
- ☐ Rectangle
- ☐ None of these

C Which is equal to 28 days?

- ☐ 4 weeks
- ☐ 7 weeks
- ☐ 1 week
- ☐ None of these

D In the equation $120 \div 5 = 24$, which numeral is the divisor?

- ☐ 120
- ☐ 24
- ☐ 5
- ☐ None of these

E Which numeral shows the answer for $4 \times \$1.15$?

- ☐ \$460
- ☐ \$46.00
- ☐ \$4.60
- ☐ \$.46
- ☐ None of these

F Which is the answer for $42 \div 6$?

- ☐ 7
- ☐ 36
- ☐ 8
- ☐ None of these

G Which numeral shows the remainder for $54 \div 5$?

- ☐ 4
- ☐ 10
- ☐ 9
- ☐ 14
- ☐ None of these

H In which row of numerals can each number be divided by 7 without a remainder?

- ☐ 7 10 13 16 19
- ☐ 28 35 14 7 28 21
- ☐ 19 23 11 7 15 19
- ☐ 13 17 7 9 15 11
- ☐ None of these

I Which of these numerals can be read "three fourths"?

- ☐ $\frac{4}{3}$
- ☐ $3\frac{1}{4}$
- ☐ $\frac{3}{4}$
- ☐ None of these

Go on to the next page.

J Which numeral shows how to write twenty-four thousands with numerals?

- ☐ 2400
- ☐ 240,000
- ☐ 240
- ☐ 24,000
- ☐ None of these

K Which weight expressed below is less than 3 lb.?

- ☐ 49 oz.
- ☐ 2 lb. 15 oz.
- ☐ 50 oz.
- ☐ 2 lb. 16 oz.
- ☐ None of these

L The Youngs use 6 gallons of milk in a week. Which numeral shows the number of quarts of milk they use in a week?

- ☐ 24
- ☐ 3
- ☐ 36
- ☐ 12
- ☐ None of these

M Don paid $2.15 for a book. He gave the clerk $3. Which picture shows the correct change?

- ☐ 
- ☐ 
- ☐ 
- ☐ 
- ☐ None of these

N Which is equal to 18 pints?

- ☐ 2 gallons
- ☐ 6 quarts
- ☐ 3 quarts
- ☐ 9 quarts
- ☐ None of these

O Which of these fractions is equal to 1?

- ☐ $\frac{2}{4}$
- ☐ $\frac{4}{4}$
- ☐ $\frac{4}{5}$
- ☐ $\frac{8}{4}$
- ☐ None of these

☐ *Number correct Part 5*

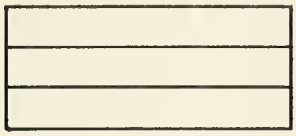
Part 6 *Concepts*

Sample What number is missing below?

10 12 14 ▩ 18 20

- ☐ 13
- ☐ 16
- ☐ 15
- ☐ 17
- ☐ None of these

A Which equation tells about the picture?



- ☐ $1 = \frac{3}{3}$
- ☐ $1 = \frac{2}{2}$
- ☐ $1 = \frac{5}{3}$
- ☐ None of these

B Which numeral belongs in place of the screen in each example below?

▩ × 6 = 6

▩ × 75 = 75

▩ × 192 = 192

- ☐ 0
- ☐ 2
- ☐ 1
- ☐ None of these

C Which numeral shows how to write this number?

hundreds	tens	ones
8	17	6

- ☐ 8176
- ☐ 976
- ☐ 823
- ☐ None of these

D John has $5.76 in his bank. Which of these statements could you make about his savings?

- ☐ He has about $5 in his bank.
- ☐ He has about $6 in his bank.
- ☐ He has about $10 in his bank.
- ☐ None of these

Go on to the next page.

E Which weight is the heaviest?

- ☐ $\frac{1}{16}$ lb.
- ☐ $\frac{1}{4}$ lb.
- ☐ $\frac{1}{8}$ lb.
- ☐ $\frac{1}{2}$ lb.

F Tom bought 40¢ worth of candy. Jack bought 8 oz. Which boy bought more candy?

- ☐ Jack
- ☐ They each bought the same amount of candy.
- ☐ Tom
- ☐ You cannot tell which boy bought more candy.

G In which of the four numerals does 2 stand for the most things?
652 256 523 1925

- ☐ In 652
- ☐ In 256
- ☐ In 523
- ☐ In 1925

H To add 58 and 74 in your head, which of these ways could you use?

- ☐ $4+8$; then $7+5$; then $12+12$
- ☐ $70+50$; then $4+8$; then $120+12$
- ☐ $4+8$; then $1+7+5$; then $12+13$
- ☐ None of these

I In which way may you think of 1003?

- ☐ As 100 tens 13 ones
- ☐ As 10 thousands 3 ones
- ☐ As 99 tens 13 ones
- ☐ As none of these

J Which numeral tells about all the black parts in the picture?

- ☐ $1\frac{1}{3}$
- ☐ $\frac{1}{3}$
- ☐ 2
- ☐ None of these

K Which numeral shows the answer for 400×30?

- ☐ 1200
- ☐ 12
- ☐ 12,000
- ☐ None of these

L Which of these fractions is larger than $\frac{1}{4}$ and smaller than $\frac{1}{2}$?
$\frac{1}{3}$ $\frac{1}{6}$ $\frac{1}{5}$ $\frac{2}{2}$

- ☐ $\frac{1}{3}$
- ☐ $\frac{1}{6}$
- ☐ $\frac{1}{5}$
- ☐ $\frac{2}{2}$
- ☐ None of these

M Each surprise package will have 4 balloons and 2 lollipops in it. There are 12 lollipops for all the packages. Which numeral shows how many balloons are needed?

- ☐ 24
- ☐ 6
- ☐ 12
- ☐ None of these

N Which row of numerals is written in order, beginning with the numeral that stands for the smallest fraction?

- ☐ $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$
- ☐ $\frac{1}{6}, \frac{1}{5}, \frac{1}{4}, \frac{1}{3}$
- ☐ $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{1}{5}$
- ☐ $\frac{1}{6}, \frac{1}{4}, \frac{1}{5}, \frac{1}{2}$
- ☐ None of these

O Imagine that you are to subtract a number that has two figures from another number that has two figures. Which tells something true about the answer?

- ☐ It will be smaller than one of the numbers.
- ☐ It will be larger than each of the numbers.
- ☐ It will have two figures.
- ☐ None of these

☐ *Number correct Part 6*

Maurice L. Hartung
Henry Van Engen
E. Glenadine Gibb
Lois Knowles

STAT 5

Seeing through arithmetic test

Scott, Foresman and Company Chicago, Atlanta, Dallas, Palo Alto, Fair Lawn, N.J.

Part	Number correct
Problem solving: Selecting answers 1	
Computation 2	
Problem solving: Selecting equations 3	
Problem solving: Solving equations 4	
Information 5	
Concepts 6	
Total	

Pupil

Teacher

Grade

Date

Part 1 *Problem solving: selecting answers*

Sample Betty has 32 shells. Ann has 25 shells. Ann has how many fewer shells than Betty?

- ☐ 57
- ☐ 17
- ☒ 7
- ☐ Answer is not given.

Sample Jack had 19 marbles. He lost 7 of them. Jack has how many marbles left?

- ☐ 26
- ☐ 17
- ☐ 7
- ☐ Answer is not given.

A Tom bought 4 packages of notebook paper at 27¢ each. How much did the four packages cost in all?

- ☐ 98¢
- ☐ 108¢
- ☐ 31¢
- ☐ 23¢
- ☐ Answer is not given.

B George has 39 marbles. His brother has 3 times as many marbles as George. How many marbles does George's brother have?

- ☐ 97
- ☐ 42
- ☐ 36
- ☐ 117
- ☐ Answer is not given.

C Mr. Childs had $20\frac{1}{4}$ bu. of peaches. He sold some and then found that he had only $6\frac{3}{4}$ bu. left. How many bushels of peaches did he sell?

- ☐ $14\frac{1}{2}$
- ☐ $13\frac{1}{2}$
- ☐ 27
- ☐ Answer is not given.

D Mrs. Castle cut some cakes into 15 pieces each. In all, she had 45 pieces of cake. How many cakes had she cut?

- ☐ 30
- ☐ 60
- ☐ 3
- ☐ Answer is not given.

E Mr. White sold 95 lb. of apples. Then he found that he still had 110 lb. of apples. How many pounds of apples did he have before he sold the 95 lb.?

- ☐ 215
- ☐ 15
- ☐ 205
- ☐ 105
- ☐ Answer is not given.

F Betty has 47 records. June has 33 records. June has how many fewer records than Betty?

- ☐ 80
- ☐ 24
- ☐ 14
- ☐ 70
- ☐ Answer is not given.

G Jim put $1.35 that he had earned in his bank. Then he had $8.10 in his bank. How much money was in his bank before he put in the $1.35?

- ☐ $9.45
- ☐ $6.75
- ☐ $7.75
- ☐ Answer is not given.

Go on to the next page.

H Susan bought oranges at 4 for 25¢. At this rate, how much would 1 dozen oranges have cost?

- ☐ $3.00
- ☐ $12.00
- ☐ $1.00
- ☐ Answer is not given.

I Paul plans to save 35¢ each week until he has saved enough to buy a basketball that costs $4.20. If he does this, how long will it take him to save the $4.20?

- ☐ 10 weeks
- ☐ 7 weeks
- ☐ $8\frac{2}{5}$ weeks
- ☐ 12 weeks
- ☐ Answer is not given.

J A bakery sold $18\frac{1}{2}$ doz. cookies in the morning and $11\frac{1}{2}$ doz. in the afternoon. How many dozen cookies were sold that day?

- ☐ 30
- ☐ 29
- ☐ 7
- ☐ Answer is not given.

K Mr. Brown bought 2 doz. eggs at 67¢ per dozen and 1 lb. of bacon for 85¢. How much in all did these groceries cost?

- ☐ $1.34
- ☐ $3.04
- ☐ $2.19
- ☐ $1.52
- ☐ Answer is not given.

L Jack is 53 in. tall, Bob is 55 in. tall, and Paul is 60 in. tall. What is the average height of these boys?

- ☐ 168 in.
- ☐ 84 in.
- ☐ 56 in.
- ☐ Answer is not given.

M Mrs. West paid $1.00 for 8 cans of soup. She bought this soup at a rate of how many cans for 25¢?

- ☐ 14
- ☐ 2
- ☐ 13
- ☐ 4
- ☐ Answer is not given.

N Jane made crepe paper flowers for decorations. She made 4 in 20 min. At this rate, how many flowers could she make in 1 hr.?

- ☐ 12
- ☐ 15
- ☐ 80
- ☐ Answer is not given.

O Dick spent twice as much time on his science lesson as he spent on his arithmetic lesson. He spent 1 hr. on his science lesson. How much time did he spend on his arithmetic lesson?

- ☐ 2 hr.
- ☐ 25 min.
- ☐ 30 min.
- ☐ Answer is not given.

☐ *Number correct Part 1*

Part 2 *Computation*

Sample $268 - 260 = n$

- ☐ 108
- ☐ 18
- ☐ 528
- ☐ 8
- ☐ Answer is not given.

A $633 - 537 = n$

- ☐ 96
- ☐ 104
- ☐ 196
- ☐ Answer is not given.

B $87 + 103 + 99 + 6 = n$

- ☐ 275
- ☐ 285
- ☐ 195
- ☐ 295
- ☐ Answer is not given.

Go on to the next page.

C $126 \div 9 = n$

- ☐ 13
- ☐ 117
- ☐ 135
- ☐ 14
- ☐ Answer is not given.

D $83905 + 68727 = n$

- ☐ 151622
- ☐ 15178
- ☐ 152632
- ☐ 152732
- ☐ Answer is not given.

E $501 \times 306 = n$

- ☐ 18036
- ☐ 153306
- ☐ 150606
- ☐ Answer is not given.

F $315 \times 68 = n$

- ☐ 4410
- ☐ 191520
- ☐ 21420
- ☐ 11420
- ☐ Answer is not given.

G $24\frac{3}{4} - 14\frac{7}{10} = n$

- ☐ $10\frac{1}{20}$
- ☐ $9\frac{19}{20}$
- ☐ $39\frac{9}{20}$
- ☐ Answer is not given.

H $11000 - 1819 = n$

- ☐ 10291
- ☐ 10181
- ☐ 10180
- ☐ 9181
- ☐ Answer is not given.

I $8170 \div 95 = n$

- ☐ $94\frac{8}{19}$
- ☐ 86
- ☐ $97\frac{11}{19}$
- ☐ Answer is not given.

J $\frac{7}{12} + 1\frac{1}{2} + 2\frac{5}{6} = n$

- ☐ $4\frac{5}{6}$
- ☐ $3\frac{11}{12}$
- ☐ $3\frac{5}{6}$
- ☐ Answer is not given.

K $3\frac{1}{2} + 4\frac{2}{3} + 6\frac{1}{4} = n$

- ☐ $14\frac{5}{12}$
- ☐ $14\frac{1}{2}$
- ☐ $13\frac{5}{12}$
- ☐ Answer is not given.

L $1\frac{3}{4} + 7\frac{1}{8} + 12\frac{1}{2} = n$

- ☐ $20\frac{1}{8}$
- ☐ $20\frac{3}{8}$
- ☐ $21\frac{3}{8}$
- ☐ Answer is not given.

M $15\frac{1}{5} - 14\frac{1}{4} = n$

- ☐ $1\frac{18}{20}$
- ☐ $1\frac{19}{20}$
- ☐ $\frac{19}{20}$
- ☐ Answer is not given.

N $1\frac{1}{3} - \frac{5}{6} = n$

- ☐ $\frac{1}{3}$
- ☐ $\frac{2}{3}$
- ☐ $\frac{1}{6}$
- ☐ $\frac{1}{2}$
- ☐ Answer is not given.

O $2850 \div 38 = n$

- ☐ 75
- ☐ $77\frac{12}{19}$
- ☐ $75\frac{10}{19}$
- ☐ Answer is not given.

☐ *Number correct Part 2*

Part 3 *Problem solving: selecting equations*

Sample Ann's mother needs 15 candles for a birthday cake. There are 5 candles in a box. How many boxes of candles does she need?

- ☐ $15 - 5 = n$
- ☐ $15 + 5 = n$
- ☐ $15 \div 5 = n$
- ☐ Equation is not given.

A Ruth had a $12\frac{1}{4}$-ft. roll of ribbon. She used $6\frac{3}{4}$ ft. of this ribbon to tie a package. How much ribbon was left on the roll?

- ☐ $6\frac{3}{4} + 12\frac{1}{4} = n$
- ☐ $12\frac{1}{4} - 6\frac{3}{4} = n$
- ☐ $12\frac{1}{4} - n = 6\frac{3}{4}$
- ☐ Equation is not given.

B Mrs. West bought two chickens. One weighed $2\frac{1}{2}$ lb., and the other weighed $2\frac{1}{4}$ lb. How much did they weigh in all?

- ☐ $2\frac{1}{4} + n = 2\frac{1}{2}$
- ☐ $n + 2\frac{1}{2} = 2\frac{1}{4}$
- ☐ $2\frac{1}{4} + 2\frac{1}{2} = n$
- ☐ Equation is not given.

C The Fisher School bus travels 62 mi. each week. The Brown School bus travels 70 mi. each week. The Brown School bus travels how many miles farther each week than the Fisher School bus?

- ☐ $70 - 62 = n$
- ☐ $70 - n = 62$
- ☐ $n - 70 = 62$
- ☐ Equation is not given.

D Tom wants to buy an airplane kit that costs \$3.50. He has \$2.15. How much more money does he need to buy the airplane kit?

- ☐ $\$2.15 + n = \$3.50$
- ☐ $n + \$2.15 = \$3.50$
- ☐ $\$3.50 + \$2.15 = n$
- ☐ Equation is not given.

E Ellen paid \$.39 for 2 loaves of bread. At this rate, how many loaves could she buy for \$.78?

- ☐ $\frac{39}{n} = \frac{78}{2}$
- ☐ $\frac{39}{2} = \frac{78}{n}$
- ☐ $\frac{n}{39} = \frac{78}{2}$
- ☐ $\frac{2}{39} = \frac{78}{n}$
- ☐ Equation is not given.

F Ann wants to put 18 daisies in each of a pair of vases. She needs how many daisies in all?

- ☐ $18 \div 2 = n$
- ☐ $18 \div n = 2$
- ☐ $2 \times 18 = n$
- ☐ $18 + 2 = n$
- ☐ Equation is not given.

G Mrs. Castle bought 12 cans of baby food at 3 cans for 29¢. How much did the 12 cans cost in all?

- ☐ $\frac{3}{29} = \frac{n}{12}$
- ☐ $\frac{29}{3} = \frac{12}{n}$
- ☐ $\frac{29}{3} = \frac{n}{12}$
- ☐ Equation is not given.

H Paul is putting the 96 rocks in his collection into 6 boxes. He plans to put the same number of rocks in each box. How many rocks will be in each box?

- ☐ $96 + 6 = n$
- ☐ $96 \div n = 6$
- ☐ $6 \times n = 96$
- ☐ Equation is not given.

I Mr. Price said that he drove his car 480 mi. in 5 days. What was the average distance he drove per day?

- ☐ $5 \times 480 = n$
- ☐ $480 - 5 = n$
- ☐ $480 \div 96 = n$
- ☐ Equation is not given.

J Sue had some cloth. She used $1\frac{1}{2}$ yd. of the cloth to make a skirt. She still has $\frac{3}{4}$ yd. of cloth left. How much cloth did she have to start with?

- ☐ $n - 1\frac{1}{2} = \frac{3}{4}$
- ☐ $1\frac{1}{2} - \frac{3}{4} = n$
- ☐ $n + 1\frac{1}{2} = \frac{3}{4}$
- ☐ $1\frac{1}{2} + n = \frac{3}{4}$
- ☐ Equation is not given.

K Jane's mother gave her \$12 to buy groceries. After Jane bought the groceries, she had \$1.15 left. How much had she spent for the groceries?

- ☐ $n + \$1.15 = \$12$
- ☐ $\$12 + \$1.15 = n$
- ☐ $\$12 - \$1.15 = n$
- ☐ $\$12 - n = \$1.15$
- ☐ Equation is not given.

Go on to the next page.

L Dick has 52 pennies in his collection. George has only 30 pennies in his collection. There are how many times as many pennies in Dick's collection as in George's collection?

- ☐ $\frac{30}{52}=\frac{n}{1}$
- ☐ $\frac{52}{30}=\frac{1}{n}$
- ☐ $\frac{52}{30}=\frac{n}{1}$
- ☐ Equation is not given.

M Jim gave 35 of his football cards away. He had 95 cards left. How many cards did he have before he gave away the 35?

- ☐ $95+35=n$
- ☐ $95-35=n$
- ☐ $n-35=95$
- ☐ Equation is not given.

N Mary has $1\frac{3}{4}$ yd. of cloth. She needs $3\frac{1}{2}$ yd. to make a dress. How much more cloth should she buy?

- ☐ $1\frac{3}{4}+3\frac{1}{2}=n$
- ☐ $3\frac{1}{2}-1\frac{3}{4}=n$
- ☐ $1\frac{3}{4}+1\frac{3}{4}+3\frac{1}{2}=n$
- ☐ $1\frac{3}{4}+n=3\frac{1}{2}$
- ☐ Equation is not given.

O David's father is 3 times as old as David. David is 12 years old. How old is his father?

- ☐ $\frac{3}{12}=\frac{1}{n}$
- ☐ $\frac{3}{1}=\frac{12}{n}$
- ☐ $\frac{3}{1}=\frac{n}{12}$
- ☐ $\frac{1}{3}=\frac{n}{12}$
- ☐ Equation is not given.

☐ *Number correct Part 3*

Part 4 *Problem solving: solving equations*

Sample $8+16=n$

- ☐ 8
- ☐ 16
- ☐ 24
- ☐ Answer is not given.

A $n+16=46$

- ☐ 30
- ☐ 16
- ☐ 62
- ☐ Answer is not given.

B $5300+n=6329$

- ☐ 29
- ☐ 11629
- ☐ 1029
- ☐ Answer is not given.

C $15\div 2=n$

- ☐ 7
- ☐ 30
- ☐ $7\frac{1}{15}$
- ☐ $7\frac{1}{2}$
- ☐ Answer is not given.

D $1\frac{1}{3}+n=8\frac{2}{3}$

- ☐ $7\frac{1}{3}$
- ☐ 10
- ☐ $9\frac{2}{3}$
- ☐ Answer is not given.

E $n+5=16$

- ☐ 21
- ☐ 11
- ☐ $3\frac{1}{5}$
- ☐ Answer is not given.

F $13\times n=39$

- ☐ 26
- ☐ 52
- ☐ 3
- ☐ Answer is not given.

G $\frac{6}{1}=\frac{n}{12}$

- ☐ 6
- ☐ 2
- ☐ 18
- ☐ 72
- ☐ Answer is not given.

H $\frac{8}{16}=\frac{n}{8}$

- ☐ 64
- ☐ 4
- ☐ 2
- ☐ Answer is not given.

Go on to the next page.

I $100 - n = 37$

- ☐ 73
- ☐ 137
- ☐ 53
- ☐ Answer is not given.

J $35 \div n = 6$

- ☐ 210
- ☐ 7
- ☐ $5\frac{5}{6}$
- ☐ 5
- ☐ Answer is not given.

K $\frac{1}{2} + n = \frac{3}{4}$

- ☐ $\frac{1}{4}$
- ☐ $\frac{1}{2}$
- ☐ $1\frac{1}{4}$
- ☐ Answer is not given.

L $n - 48 = 110$

- ☐ 52
- ☐ 62
- ☐ 158
- ☐ Answer is not given.

M $\frac{2}{n} = \frac{12}{6}$

- ☐ 1
- ☐ 4
- ☐ 6
- ☐ 3
- ☐ Answer is not given.

N $\frac{45}{22} = \frac{n}{66}$

- ☐ 22
- ☐ 125
- ☐ 135
- ☐ 90
- ☐ Answer is not given.

O $\frac{64}{100} = \frac{16}{n}$

- ☐ 400
- ☐ 50
- ☐ 25
- ☐ 4
- ☐ Answer is not given.

STOP

☐ *Number correct Part 4*

Part 5 *Information*

Sample Which is equal to 1 yard?

- ☐ 9 feet
- ☐ 30 inches
- ☐ 3 feet
- ☐ 12 inches
- ☐ None of these

A Which of these fraction numerals is an improper fraction numeral?

- ☐ $\frac{10}{20}$
- ☐ $\frac{5}{32}$
- ☐ $\frac{13}{10}$
- ☐ $\frac{5}{9}$
- ☐ None of these

B One of these fraction numerals is <u>not</u> in lowest terms. Which one is it?

- ☐ $\frac{2}{7}$
- ☐ $\frac{2}{4}$
- ☐ $\frac{5}{8}$
- ☐ $\frac{9}{11}$

C Which of these shows how to write the Roman numeral for 19?

- ☐ IXX
- ☐ XIV
- ☐ XIX
- ☐ None of these

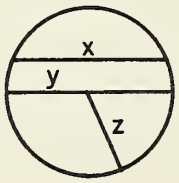
D If it is now 10:00 A.M., which numeral tells what time it will be 3 hours from now?

- ☐ 1:00 A.M.
- ☐ 7:00 A.M.
- ☐ 1:00 P.M.
- ☐ None of these

E Which weight expressed below is more than 2 lb.?

- ☐ 39 oz.
- ☐ 1 lb. 16 oz.
- ☐ 25 oz.
- ☐ 1 lb. 15 oz.
- ☐ None of these

F In the circle, which line represents the diameter?



- ☐ Line y
- ☐ Line x
- ☐ Line z
- ☐ None of these

G Which represents the longest distance?

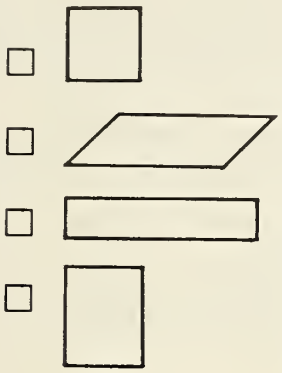
- ☐ 1000 yd.
- ☐ 4000 ft.
- ☐ 1 mi.
- ☐ 6000 in.

Go on to the next page.

H Which represents the area of a rectangle that is 6 in. long and 4 in. wide?

- ☐ 10 sq. in.
- ☐ 20 sq. in.
- ☐ 24 sq. in.
- ☐ None of these

I One of these is not a rectangle. Which one is it?



J Which is the lowest common denominator for the fractions $\frac{1}{2}$, $\frac{2}{3}$, and $\frac{1}{3}$?

- ☐ 18
- ☐ 2
- ☐ 12
- ☐ 6
- ☐ None of these

K Which is equal to 2 quarts?

- ☐ 1 gallon
- ☐ 4 pints
- ☐ 8 pints
- ☐ 1 pint
- ☐ None of these

L Look at the following four ratios. Which two of them are equal?

2 to 4 2 to 3 2 to 6 4 to 8

- ☐ 2 to 4 and 2 to 3
- ☐ 2 to 6 and 4 to 8
- ☐ 2 to 3 and 4 to 8
- ☐ 2 to 4 and 4 to 8
- ☐ None of these

M On a scale drawing, 2 ft. is represented by 1 in. How many inches will represent 6 ft.?

- ☐ 12 in.
- ☐ 6 in.
- ☐ 3 in.
- ☐ None of these

N What must you know about a field to find the length of a fence that will enclose it?

- ☐ The area
- ☐ The width
- ☐ The number of acres
- ☐ The perimeter
- ☐ None of these

O Which of these is equal to the perimeter of a 1-inch square?

- ☐ 1 sq. in.
- ☐ 4 in.
- ☐ 4 sq. in.
- ☐ 1 in.
- ☐ None of these

☐ *Number correct Part 5*

Part 6 *Concepts*

Sample What number is missing below?

10 12 14 ■ 18 20

- ☐ 13
- ☐ 16
- ☐ 15
- ☐ 17
- ☐ None of these

A In one of the rows below, the fractions are in order from smallest at the left to largest at the right. Which row is this?

- ☐ $\frac{3}{5}, \frac{3}{10}, \frac{3}{7}, \frac{3}{4}, \frac{3}{8}$
- ☐ $\frac{3}{10}, \frac{3}{8}, \frac{3}{7}, \frac{3}{5}, \frac{3}{4}$
- ☐ $\frac{3}{8}, \frac{3}{10}, \frac{3}{4}, \frac{3}{7}, \frac{3}{5}$
- ☐ $\frac{3}{4}, \frac{3}{5}, \frac{3}{7}, \frac{3}{8}, \frac{3}{10}$

B Imagine that you are to divide a whole number that has only two figures by a whole number that has only one figure and is greater than 1. Which is true about the answer?

- ☐ It will be larger than each of the numbers.
- ☐ It will be smaller than one of the numbers.
- ☐ It will always have two figures.
- ☐ None of these

C Discover the plan used in writing the numerals in the list below. Then decide which numeral belongs in place of n.

2, $2\frac{1}{2}$, 3, n, 4, $4\frac{1}{2}$

- ☐ $4\frac{1}{3}$
- ☐ $4\frac{1}{2}$
- ☐ $4\frac{3}{4}$
- ☐ $5\frac{1}{2}$
- ☐ None of these

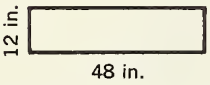
Go on to the next page.

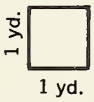
D Look at the picture. Which fraction numeral most nearly represents the black part?

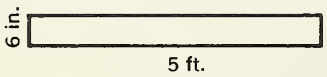
- ☐ $\frac{15}{16}$
- ☐ $\frac{3}{4}$
- ☐ $\frac{9}{18}$
- ☐ $\frac{1}{4}$
- ☐ $\frac{1}{8}$

E Which one of these represents the largest area?

- ☐ 

- ☐ 

- ☐ 

- ☐ 

F Each basket of fruit will have 5 apples and 3 oranges in it. There are 12 oranges for all the baskets. How many apples are needed?

- ☐ 12
- ☐ 8
- ☐ 20
- ☐ None of these

G Which number will divide any whole number without a remainder?

- ☐ 2
- ☐ 1
- ☐ 4
- ☐ 5

H Each of these five numerals is written with four 2's. Which numeral stands for the largest number?

$\frac{222}{2}$ $\frac{22}{22}$ $\frac{2}{222}$ $2\frac{2}{22}$ $22\frac{2}{2}$

- ☐ $\frac{222}{2}$
- ☐ $\frac{22}{22}$
- ☐ $\frac{2}{222}$
- ☐ $2\frac{2}{22}$
- ☐ $22\frac{2}{2}$

I Which numeral represents a number that is 100 times 600?

- ☐ 6000
- ☐ 60,000
- ☐ 600,000
- ☐ 6,000,000
- ☐ None of these

J Which of these fractions would not be shown on a cup marked to show twelfths?

- ☐ $\frac{1}{2}$
- ☐ $\frac{2}{6}$
- ☐ $\frac{3}{4}$
- ☐ $\frac{1}{5}$

K Which one of these amounts would you find by measurement?

- ☐ 3 apples
- ☐ 1 dozen oranges
- ☐ 34 people
- ☐ 3 lb. of apples

L How many 1-inch squares will it take to cover a rectangle 4 inches wide and 12 inches long?

- ☐ 48
- ☐ 12
- ☐ 32
- ☐ 16
- ☐ None of these

M Look at the picture. Which fraction numeral represents the part that is black?

- ☐ $\frac{1}{2}$
- ☐ $\frac{1}{3}$
- ☐ $\frac{1}{4}$
- ☐ None of these

N From what you have learned about fractions, which says something true about the sum of two fractions?

- ☐ The sum is <u>always</u> greater than 1.
- ☐ The sum is <u>always</u> less than 1.
- ☐ The sum is <u>always</u> greater than one of the fractions.
- ☐ None of these

O Mr. Post has 1800 bu. of corn to take to town. His truck will carry 500 bu. at a time. How many <u>trips</u> will he need to make?

- ☐ 4
- ☐ $3\frac{3}{5}$
- ☐ $3\frac{1}{2}$
- ☐ 3

☐ *Number correct Part 6*

Maurice L. Hartung
Henry Van Engen
E. Glenadine Gibb
Lois Knowles

STAT 6

Seeing through arithmetic test

Scott, Foresman and Company *Chicago, Atlanta, Dallas, Palo Alto, Fair Lawn, N.J.*

Part	*Number correct*
Problem solving: Selecting answers 1	
Computation 2	
Problem solving: Selecting equations 3	
Problem solving: Solving equations 4	
Information 5	
Concepts 6	
Total	

Pupil

Teacher

Grade *Date*

Part 1 *Problem solving: selecting answers*

Sample Betty has 32 shells. Ann has 25 shells. Ann has how many fewer shells than Betty?

- ☐ 57
- ☐ 17
- ☒ 7
- ☐ Answer is not given.

Sample Jack had 19 marbles. He lost 7 of them. Jack has how many marbles left?

- ☐ 26
- ☐ 17
- ☐ 7
- ☐ Answer is not given.

A Bill worked 2 hours in the morning and 3 hours in the afternoon. He earned 60¢ per hour. How much did he earn that day?

- ☐ $30.00
- ☐ $3.60
- ☐ $3.50
- ☐ $3.00
- ☐ Answer is not given.

B Bill put $3.65 he had earned in his bank. Then he had $10.15 in his bank. How much money was in his bank before he put in the $3.65?

- ☐ $6.50
- ☐ $7.50
- ☐ $13.80
- ☐ Answer is not given.

C Bill has 42 records. June has 27 records. June has how many fewer records than Bill?

- ☐ 69
- ☐ 25
- ☐ 15
- ☐ 5
- ☐ Answer is not given.

D The distance from Deepwater to Grand City is 125 mi. On a map that has a scale of 16 mi. per 1 in., how many inches will represent this distance?

- ☐ 109
- ☐ $7\frac{13}{16}$
- ☐ $6\frac{9}{16}$
- ☐ Answer is not given.

E George has a board that is $8\frac{1}{2}$ ft. long. He plans to make 2 shelves of the same length from it. How long will each shelf be?

- ☐ 17 ft.
- ☐ $4\frac{1}{2}$ ft.
- ☐ $4\frac{1}{4}$ ft.
- ☐ Answer is not given.

F Mrs. Newton had $2\frac{2}{3}$ pints of ice cream in her freezer. After using some, she found that she had $1\frac{1}{2}$ pints left. How much ice cream did she use?

- ☐ $4\frac{1}{6}$ pt.
- ☐ $1\frac{1}{6}$ pt.
- ☐ $1\frac{1}{3}$ pt.
- ☐ Answer is not given.

G Tom's baseball practice lasted twice as long as his piano practice. He spent 1 hr. in baseball practice. How much time did he spend on his piano practice?

- ☐ 30 min.
- ☐ 2 hr.
- ☐ $1\frac{1}{2}$ hr.
- ☐ Answer is not given.

Go on to the next page.

H Mr. March has a 750-acre farm. 500 acres are planted in corn. What fraction of the farm is planted in corn?

- ☐ $\frac{5}{7}$
- ☐ $\frac{3}{2}$
- ☐ $\frac{2}{3}$
- ☐ $\frac{1}{3}$
- ☐ Answer is not given.

I Mr. Miller has to drive to New York, about 240 mi. away. He plans to drive at an average speed of 45 mi. per hour. How many hours will it take him to drive to New York?

- ☐ 6
- ☐ $5\frac{1}{4}$
- ☐ 5
- ☐ $5\frac{1}{3}$
- ☐ Answer is not given.

J On a test, Clarence answered 30% of the exercises correctly. There were 60 exercises in the test. How many exercises did he answer correctly?

- ☐ 30
- ☐ 18
- ☐ 2
- ☐ 50
- ☐ Answer is not given.

K On an arithmetic test of 24 exercises, Susan answered 18 of them correctly. She had correct answers for what fraction of the exercises? Express the answer as a decimal fraction numeral in hundredths.

- ☐ .75
- ☐ .67
- ☐ .80
- ☐ 1.33
- ☐ Answer is not given.

L Mr. Bell's farm is 200 acres. Mr. Allen's farm is about .7 as large as Mr. Bell's farm. About how many acres is Mr. Allen's farm?

- ☐ 285.7
- ☐ 140
- ☐ 14.0
- ☐ Answer is not given.

M The sixth grade raised $20 for the Red Cross. Their goal was $16. They raised what per cent of their goal?

- ☐ 125%
- ☐ 80%
- ☐ 75%
- ☐ Answer is not given.

N Mr. Miller used .6 of one full tank of gasoline on a trip. He used about 9 gal. About how many gallons of gasoline does the tank hold?

- ☐ 54
- ☐ 5.4
- ☐ 15
- ☐ 13
- ☐ Answer is not given.

O Mrs. Steel bought 3 chickens that weighed 6.2 lb., 5.8 lb., and 6.0 lb. She paid $7.20 in all for the chickens. She paid how much per pound?

- ☐ 40¢
- ☐ $1.20
- ☐ 4¢
- ☐ Answer is not given.

☐ *Number correct Part 1*

Part 2 *Computation*

Sample $268 - 260 = n$

- ☐ 108
- ☐ 18
- ☐ 528
- ☐ 8
- ☐ Answer is not given.

A $527 - 388 = n$

- ☐ 39
- ☐ 239
- ☐ 149
- ☐ Answer is not given.

B $14.640 + 5.486 = n$

- ☐ 19.126
- ☐ 20.126
- ☐ 69.50
- ☐ Answer is not given.

C $27.02 + 18.60 + 14.95 = n$

- ☐ 59.57
- ☐ 50.57
- ☐ 60.57
- ☐ 505.7
- ☐ Answer is not given.

D $42 \times 680 = n$

- ☐ 28560
- ☐ 2856
- ☐ 4080
- ☐ Answer is not given.

E $13.2 \div .4 = n$

Which is the answer to the nearer whole number?

- ☐ 3
- ☐ 330
- ☐ 33
- ☐ Answer is not given.

F $6\frac{7}{8} + 5\frac{3}{4} = n$

- ☐ $11\frac{5}{8}$
- ☐ $12\frac{5}{8}$
- ☐ $12\frac{1}{2}$
- ☐ Answer is not given.

G $2\frac{1}{2} + 3\frac{2}{3} + 8\frac{1}{4} = n$

- ☐ $14\frac{5}{12}$
- ☐ 13
- ☐ $13\frac{5}{12}$
- ☐ Answer is not given.

H $45.983 - 11.036 = n$

- ☐ 34.847
- ☐ 349.47
- ☐ 34.957
- ☐ Answer is not given.

I $6\frac{3}{4} \div 2\frac{1}{2} = n$

- ☐ $16\frac{7}{8}$
- ☐ $5\frac{2}{5}$
- ☐ $2\frac{7}{10}$
- ☐ Answer is not given.

J $3.2 \times .008 = n$

- ☐ .256
- ☐ 2.56
- ☐ .0256
- ☐ 25.6
- ☐ Answer is not given.

K $5.922 \div 94 = n$

Which is the answer to the nearer thousandth?

- ☐ .630
- ☐ 6.300
- ☐ .063
- ☐ Answer is not given.

L $17\frac{1}{5} - 12\frac{1}{4} = n$

- ☐ $29\frac{9}{20}$
- ☐ $4\frac{19}{20}$
- ☐ $5\frac{9}{20}$
- ☐ $3\frac{19}{20}$
- ☐ Answer is not given.

M $3\frac{4}{5} \times 7\frac{2}{3} = n$

- ☐ $\frac{57}{115}$
- ☐ $11\frac{7}{15}$
- ☐ $29\frac{2}{15}$
- ☐ Answer is not given.

N $16.3 \times .75 = n$

- ☐ 12.225
- ☐ 1.956
- ☐ 122.25
- ☐ 12225
- ☐ Answer is not given.

O $6\frac{1}{2} \div 8\frac{2}{3} = n$

- ☐ $56\frac{1}{3}$
- ☐ $1\frac{1}{3}$
- ☐ $\frac{3}{4}$
- ☐ Answer is not given.

☐ *Number correct Part 2*

Part 3 *Problem solving: selecting equations*

Sample Ann's mother needs 15 candles for a birthday cake. There are 5 candles in a box. How many boxes of candles does she need?

- ☐ $15-5=n$
- ☐ $15+5=n$
- ☐ $15\div5=n$
- ☐ Equation is not given.

A Cal has won 11 of the 15 games he has pitched for his baseball team. Cal has won what fraction of the games he has pitched?

- ☐ $15+11=n$
- ☐ $\frac{11}{1}=\frac{n}{15}$
- ☐ $\frac{15}{11}=\frac{n}{1}$
- ☐ $\frac{11}{15}=\frac{n}{1}$
- ☐ Equation is not given.

B Mrs. Parker paid $7 apiece for a pair of small rugs and $18 for a larger rug. She paid how much in all for the 3 rugs?

- ☐ $(2\times7)+18=n$
- ☐ $7+18=n$
- ☐ $(2\times18)+7=n$
- ☐ $18-(2\times7)=n$
- ☐ Equation is not given.

C Mary bought some ice cream. She used $1\frac{1}{2}$ pints of it for her party. Then she found that she had $\frac{1}{2}$ pint left. How much ice cream had she bought?

- ☐ $1\frac{1}{2}-\frac{1}{2}=n$
- ☐ $1\frac{1}{2}+\frac{1}{2}=n$
- ☐ $n-1\frac{1}{2}=\frac{1}{2}$
- ☐ $1\frac{1}{2}+n=\frac{1}{2}$
- ☐ Equation is not given.

D Mr. Green paid $45 for a bicycle that was on sale. The regular price of the bicycle was $60. The sale price was what per cent of the regular price?

- ☐ $60-45=n$
- ☐ $\frac{60}{100}=\frac{n}{45}$
- ☐ $\frac{45}{60}=\frac{n}{100}$
- ☐ $\frac{60}{45}=\frac{n}{100}$
- ☐ Equation is not given.

E Allen has 3 foreign stamps for every 5 United States stamps in his collection. He has 150 United States stamps. How many foreign stamps does he have?

- ☐ $\frac{3}{5}=\frac{150}{n}$
- ☐ $150\div5=n$
- ☐ $150\div3=n$
- ☐ $\frac{3}{5}=\frac{n}{150}$
- ☐ Equation is not given.

F Bill's father weighs just 2 times as much as Bill does. Bill weighs 74 pounds. How much does his father weigh?

- ☐ $\frac{2}{74}=\frac{1}{n}$
- ☐ $\frac{2}{1}=\frac{74}{n}$
- ☐ $\frac{2}{1}=\frac{n}{74}$
- ☐ $\frac{1}{2}=\frac{n}{74}$
- ☐ Equation is not given.

G Mrs. Row bought some paint. She used $\frac{1}{4}$ gal. in painting some furniture. When she finished, she had $\frac{3}{4}$ gal. of paint left. How much paint did she have in the beginning?

- ☐ $\frac{1}{4}+\frac{3}{4}=n$
- ☐ $n-\frac{3}{4}=\frac{1}{4}$
- ☐ $\frac{3}{4}-\frac{1}{4}=n$
- ☐ $n-\frac{1}{4}=\frac{3}{4}$
- ☐ Equation is not given.

H Grapefruit are priced at 6 for $.46. At this rate, how much will 10 grapefruit cost?

- ☐ $\frac{6}{10}=\frac{n}{46}$
- ☐ $\frac{6}{46}=\frac{10}{n}$
- ☐ $\frac{6}{46}=\frac{n}{10}$
- ☐ $\frac{10}{46}=\frac{n}{6}$
- ☐ Equation is not given.

I Mr. Castle has 150 acres of corn. He has $\frac{1}{3}$ as many acres of wheat as he has acres of corn. He has how many acres of wheat?

- ☐ $\frac{150}{1}=\frac{\frac{1}{3}}{n}$
- ☐ $\frac{\frac{1}{3}}{1}=\frac{150}{n}$
- ☐ $\frac{\frac{1}{3}}{1}=\frac{n}{150}$
- ☐ Equation is not given.

Go on to the next page.

J Mr. Stevens has 126 foreign stamps. He has promised to give an equal number of these stamps to each of 9 boys. How many stamps should he give to each boy?

- ☐ $126 \div n = 9$
- ☐ $9 \times 126 = n$
- ☐ $126 - 9 = n$
- ☐ Equation is not given.

K Mrs. Wood is cooking a 5-lb. roast. It has been cooking for 45 min. The roast should be cooked 25 min. per pound. How much longer should the roast be cooked?

- ☐ $45 + n = (5 \times 25)$
- ☐ $(5 \times 25) + 45 = n$
- ☐ $5 \times 25 = n$
- ☐ Equation is not given.

L The population of Johnstown is about 2800. The population of Stevens Point is about 10,000. The population of Stevens Point is about how many times as great as the population of Johnstown?

- ☐ $10000 - 2800 = n$
- ☐ $\frac{2800}{10000} = \frac{n}{1}$
- ☐ $\frac{10000}{2800} = \frac{n}{1}$
- ☐ Equation is not given.

M The Millers spend about 20% of their weekly income for food. They spend about $30 per week for food. What is the Millers' approximate weekly income?

- ☐ $\frac{20}{100} = \frac{30}{n}$
- ☐ $\frac{20}{30} = \frac{n}{100}$
- ☐ $\frac{20}{1} = \frac{30}{n}$
- ☐ $\frac{20}{100} = \frac{n}{30}$
- ☐ Equation is not given.

N On a map, the distance from Rock Falls to Miller is 3 in. Each $\frac{1}{2}$ in. on the map represents 15 mi. What is the distance in miles from Rock Falls to Miller?

- ☐ $15 \times \frac{1}{2} = n$
- ☐ $\frac{3}{\frac{1}{2}} = \frac{15}{n}$
- ☐ $\frac{15}{\frac{1}{2}} = \frac{n}{3}$
- ☐ Equation is not given.

O Jim has $28.00 in his savings account. The bicycle that he wants to buy costs $39.65. How much more money does Jim need to buy the bicycle?

- ☐ $\$28.00 + n = \$39.65$
- ☐ $n + \$28.00 = \$39.65$
- ☐ $\$28.00 + \$39.65 = n$
- ☐ $\$39.65 - \$28.00 = n$
- ☐ Equation is not given.

☐ *Number correct Part 3*

Part 4 *Problem solving: solving equations*

Sample $8 + 16 = n$

- ☐ 8
- ☐ 16
- ☐ 24
- ☐ Answer is not given.

A $\frac{6}{8} = \frac{15}{n}$

- ☐ 21
- ☐ 20
- ☐ $2\frac{1}{2}$
- ☐ 120
- ☐ Answer is not given.

B $7 + (9 \times 2) = n$

- ☐ 25
- ☐ 32
- ☐ 23
- ☐ 18
- ☐ Answer is not given.

C $\frac{8}{n} = \frac{4}{9}$

- ☐ 72
- ☐ 18
- ☐ 32
- ☐ Answer is not given.

D $\frac{4}{10} = \frac{6}{n}$

- ☐ $6\frac{2}{3}$
- ☐ $2\frac{2}{5}$
- ☐ 20
- ☐ Answer is not given.

E $45 - n = 15$

- ☐ 30
- ☐ 3
- ☐ 60
- ☐ Answer is not given.

Go on to the next page.

F $2 \times (7 + 9) = n$

- ☐ 23
- ☐ 126
- ☐ 18
- ☐ 32
- ☐ Answer is not given.

G $(8 + 12) \div n = 4$

- ☐ 4
- ☐ 2
- ☐ 5
- ☐ 24
- ☐ Answer is not given.

H $n + (5 + 8) = 39$

- ☐ 3
- ☐ 52
- ☐ 13
- ☐ 26
- ☐ Answer is not given.

I $n - 68 = 110$

- ☐ 52
- ☐ 42
- ☐ 178
- ☐ Answer is not given.

J $45 \div n = 7$

- ☐ 6
- ☐ $7\frac{1}{2}$
- ☐ 315
- ☐ $6\frac{3}{7}$
- ☐ Answer is not given.

K $\frac{6}{1} = \frac{45}{n}$

- ☐ 270
- ☐ $\frac{6}{45}$
- ☐ $7\frac{1}{2}$
- ☐ Answer is not given.

L $n - (6 + 7) = 22$

- ☐ 35
- ☐ 286
- ☐ 9
- ☐ Answer is not given.

M $(6 \times 5) + (5 + 6) = n$

- ☐ 35
- ☐ 41
- ☐ 30
- ☐ Answer is not given.

N $3 \div 17 = n$

- ☐ $\frac{17}{3}$
- ☐ $5\frac{2}{3}$
- ☐ 51
- ☐ $\frac{3}{17}$
- ☐ Answer is not given.

O $\frac{.5}{1} = \frac{n}{2}$

- ☐ 10
- ☐ 4
- ☐ 1
- ☐ Answer is not given.

STOP

☐ *Number correct Part 4*

Part 5 *Information*

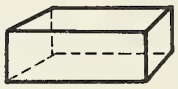
Sample Which is equal to 1 yard?

- ☐ 9 feet
- ☐ 30 inches
- ☐ 3 feet
- ☐ 12 inches
- ☐ None of these

A Which weight is equal to 3 lb.?

- ☐ 2 lb. 12 oz.
- ☐ 2 lb. 16 oz.
- ☐ 1 lb. 24 oz.
- ☐ 45 oz.
- ☐ None of these

B Which picture shows a cone?

- ☐ 
- ☐ 
- ☐ 
- ☐ 
- ☐ None of these

C Which of these fractions equals $\frac{35}{105}$ expressed in lowest terms?

- ☐ $\frac{1}{3}$
- ☐ $\frac{1}{7}$
- ☐ $\frac{7}{21}$
- ☐ $\frac{5}{15}$
- ☐ None of these

D Which length is less than 2 ft.?

- ☐ $\frac{2}{3}$ yd.
- ☐ 25 in.
- ☐ $1\frac{5}{4}$ ft.
- ☐ $\frac{12}{8}$ ft.

Go on to the next page.

E Which of these statements is false?

- ☐ $\frac{1}{2}+\frac{2}{3}=\frac{2}{3}+\frac{1}{2}$
- ☐ $\frac{2}{3}\times\frac{3}{2}=1$
- ☐ $6<9+12$
- ☐ $6+3\neq 9$
- ☐ None of these

F Which of the following is not another name for 5?

- ☐ 5%
- ☐ $\frac{25}{5}$
- ☐ $\frac{5}{1}$
- ☐ V

G What is the lowest common denominator for the fraction numerals $\frac{5}{8}$, $\frac{1}{2}$, and $\frac{1}{6}$?

- ☐ 48
- ☐ 24
- ☐ 16
- ☐ 96
- ☐ None of these

H Which of these measurements is nearest to 3 inches?

- ☐ $\frac{1}{3}$ ft.
- ☐ 2.525 in.
- ☐ 2.975 in.
- ☐ 3.975 in.

I If you use the ratio test, which of these equations of ratios can you rewrite as $4n=6\times 3$?

- ☐ $\frac{4}{n}=\frac{6}{3}$
- ☐ $\frac{n}{6}=\frac{3}{4}$
- ☐ $\frac{n}{4}=\frac{6}{3}$
- ☐ None of these

J One of the numbers represented below is not in the solution set for $n>5$. Which one is it?

- ☐ 6
- ☐ 25
- ☐ 5
- ☐ 9
- ☐ 5.003

K What must you know about a floor to find how much varnish is needed to refinish it?

- ☐ The width
- ☐ The perimeter
- ☐ The area
- ☐ None of these

L One of these pairs is not a pair of equal ratios. Which pair is it?

- ☐ $\frac{2}{3}, \frac{8}{12}$
- ☐ $\frac{16}{8}, \frac{2}{1}$
- ☐ $\frac{2\frac{1}{2}}{4}, \frac{10}{16}$
- ☐ $\frac{\frac{1}{2}}{2}, \frac{2}{4}$

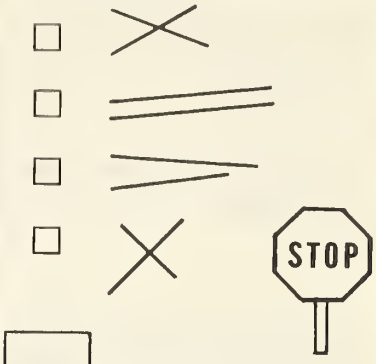
M Which is equal to 3 square yards?

- ☐ 36 sq. ft.
- ☐ 9 sq. ft.
- ☐ 144 sq. ft.
- ☐ None of these

N In one of these pairs, one number is not the reciprocal of the other. Which pair is this?

- ☐ $3, \frac{3}{3}$
- ☐ $\frac{2}{5}, \frac{5}{2}$
- ☐ $\frac{1}{2}, 2$
- ☐ $\frac{2}{3}, \frac{3}{2}$

O Which of these shows perpendicular lines?



☐ *Number correct Part 5*

Part 6 *Concepts*

Sample What number is missing below?

10 12 14 ▒ 18 20

- ☐ 13
- ☐ 16
- ☐ 15
- ☐ 17
- ☐ None of these

A If 40% of a sixth-grade class are boys, how many girls are there?

- ☐ 60
- ☐ The number of girls is the same as the number of boys.
- ☐ 15
- ☐ There are more boys than girls.
- ☐ None of these

B The fraction numerals below represent pieces of pie. Which represents the largest piece?

$\frac{2}{3}$ $\frac{3}{8}$ $\frac{10}{21}$ $\frac{1}{15}$

- ☐ $\frac{2}{3}$
- ☐ $\frac{3}{8}$
- ☐ $\frac{10}{21}$
- ☐ $\frac{1}{15}$

Go on to the next page.

C Which row of numerals is in order, beginning with the numeral that stands for the largest fraction?

- ☐ $\frac{5}{6}, \frac{5}{12}, \frac{5}{8}, \frac{5}{16}$
- ☐ $\frac{5}{16}, \frac{5}{12}, \frac{5}{8}, \frac{5}{6}$
- ☐ $\frac{5}{6}, \frac{5}{8}, \frac{5}{12}, \frac{5}{16}$
- ☐ $\frac{1}{7}, \frac{1}{5}, \frac{1}{3}, \frac{1}{2}$

D What can you say about the product of two numbers when they are reciprocals?

- ☐ Always equal to zero
- ☐ Always larger than either number
- ☐ Always smaller than either number
- ☐ Always equal to 1
- ☐ None of these

E In which of these equations can you replace n with the same numeral as you can in $3+4+n=12$?

- ☐ $3+4+12=n$
- ☐ $3+n+12=46$
- ☐ $n+3+4=12$
- ☐ $12-4=n$
- ☐ None of these

F When $\frac{2}{3}$ is multiplied by another number greater than zero, which of these statements is always true of the answer?

- ☐ The answer is always greater than 1.
- ☐ The answer is always less than 1.
- ☐ The answer is always less than $\frac{2}{3}$.
- ☐ The answer is always greater than $\frac{2}{3}$.
- ☐ None of these

G How many groups of 100 objects could you make from 3000 objects?

- ☐ 0
- ☐ 3
- ☐ 30
- ☐ 300

H One of these numerals is <u>not</u> a name for the fraction one half. Which one is it?

- ☐ 50%
- ☐ .5
- ☐ $\frac{2}{4}$
- ☐ $\frac{50}{100}$

I Discover the plan used in writing the numerals in the list below. Then decide which numeral would replace n.
.90, .95, n, 1.05, 1.10

- ☐ 10.00
- ☐ 1.00
- ☐ .10
- ☐ .05
- ☐ None of these

J If you multiply two numbers that are expressed by proper fraction numerals, what can you say about the answer?

- ☐ It can be more than 1.
- ☐ It will be less than 1.
- ☐ It can be equal to 1.
- ☐ None of these

K How many feet are equal to 1 inch?

- ☐ 12
- ☐ $\frac{1}{12}$
- ☐ 36
- ☐ $\frac{1}{3}$
- ☐ None of these

L Six out of every ten persons wear glasses. Which of these symbols can you use to describe this situation?

- ☐ Fraction numeral $\frac{6}{10}$
- ☐ .6
- ☐ 6%
- ☐ Ratio $\frac{6}{10}$
- ☐ None of these

M In which of these equations is n <u>not</u> equal to 6.2?

- ☐ $74.4 \div 12 = n$
- ☐ $37.2 \div 6 = n$
- ☐ $372 \div 60 = n$
- ☐ $7.44 \div .12 = n$
- ☐ None of these

N How many 1-foot cubes can be put in a box with inside dimensions 2 ft. x 2 ft. x 2 ft.?

- ☐ 2
- ☐ 6
- ☐ 8
- ☐ 96
- ☐ None of these

O A trucker has 800 T. of coal to haul. His truck will haul 15 T. at a time. How many <u>trips</u> will he need to make?

- ☐ 60
- ☐ $53\frac{1}{3}$
- ☐ 53
- ☐ $53\frac{1}{2}$
- ☐ None of these

☐ *Number correct Part 6*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 70 69 68 67 66 65 64 63 62 61 60

New Edition
Form B

ELEMENTARY SCIENCE TEST

EDMONTON PUBLIC SCHOOLS

GRADE IV.

NAME ..... DATE ..... SCORE .....

DIRECTIONS TO PUPILS: Study the sample questions before you begin the test.

SAMPLE A.

A. Which animal has feathers:

a. bird b. dog c. fish d. butterfly

This statement has four suggested answers. Choose the BEST answer or the one you think is correct. On the **answer sheet** (SAMPLE A) mark with a heavy cross (X) the letter of the answer you chose. The correct answer for sample A is "bird", so mark "a" with an "X" on the answer sheet.

SAMPLE B.

B. Which one of the following foods contains the most starch:

a. tomatoes b. lettuce c. bread d. egg yolk

Do the same in this question. Choose the BEST answer or the one you think is correct. Mark its answer on your answer sheet with a heavy "X". As you see, the correct answer is "c".

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1. The fin is that part of the fish which is used for:
   a. moving about b. breathing air c. body covering d. eating food

2. An insect's antennae are often used as:
   a. legs b. wings c. feelers d. body

3. The hot melted rock thrown up by a volcano is called:
   a. ore b. lava c. a geyser d. an eruption

4. Pines, spruces and firs are trees in which the seeds grow:
   a. in pods b. in flowers c. in cones d. in cobs

5. Most fish belong to the animal group which breathes through:
   a. lungs b. gills c. fins d. body breathing holes

6. In the air, the gas which animals breathe to stay alive is:
   a. carbon dioxide b. oxygen c. hydrogen d. nitrogen

7. The structure of an animal or plant means:
   a. how it is made b. what color it is c. how it breathes d. where it lives

8. Which machine uses air in its operation:
   a. vacuum cleaner b. electro magnet c. screwdriver d. washing machine

9. Which machine does not use electricity:
   a. television b. flashlight c. steam engine d. vacuum cleaner

10. The greatest amount of the earth's surface that can have daylight at any one time is about:
    a. one-quarter b. one-half c. two-thirds d. nine-tenths

11. Spiders are not classed as insects because they have:
    a. four legs b. many legs c. six legs d. eight legs

12. Any record or imprint of plant or animal life is called:
    a. igneous rock b. a mineral c. a dinosaur d. a fossil

13. As adults, most insects have a body which is divided into:
    a. one part b. two parts c. three parts d. four parts

14. The inside of a dry cell is made of:
    a. magnets b. chemicals c. water d. rust

15. Adult insects have:
    a. six legs b. four legs c. eight legs d. two legs

16. What are the movers of our body called:
    a. fat b. skin c. bones d. muscles

17. All living things are alike because:
    a. they take in air by means of lungs
    b. they have the same kind of body covering
    c. they produce others of the same kind d. they move about by means of legs

18. One of the chief ways in which soil is made from rock is by the wearing and rubbing action of:
    a. humus b. minerals c. plants d. water carrying sediment

19. Water is needed by all living things to:
a. dissolve their foods
b. make them green
c. keep them cool
d. kill disease germs

20. Which substance is a good conductor of electricity:
a. rubber
b. wood
c. copper
d. nickel

21. Plant life may be grouped into:
a. 2 main groups
b. 5 main groups
c. 7 main groups
d. 3 main groups

22. Which is not a source of fuel energy:
a. coal
b. petroleum
c. natural gas
d. brick

23. Which one of the following things depends on air pressure to make it work:
a. drinking straw
b. an elevator
c. a carpenter's hammer
d. a toothbrush

24. Frogs are:
a. mammals
b. fish
c. amphibians
d. reptiles

25. Living things can be divided into:
a. 2 main groups
b. 3 main groups
c. 4 main groups
d. 5 main groups

26. Humus in the soil comes from:
a. rocks
b. minerals
c. decayed plants
d. coal

27. Which causes a balloon to expand:
a. water pressure
b. air contraction
c. oxygen
d. compressed air

28. One of the main gases in the air used by green plants and given off by animals is:
a. oxygen
b. hydrogen
c. carbon dioxide
d. nitrogen

29. A seed contains:
a. the roots for a new plant
b. a tiny baby plant with a supply of food
c. small leaves
d. only a supply of food

30. The science of the study of the earth, its minerals and rocks, is called:
a. geology
b. geography
c. mining
d. conservation

31. Working with a dry cell is safe because:
a. it makes a small amount of electricity
b. it makes a strong current
c. it is not connected to the current in the building
d. the current cannot flow

32. Most flowering plants produce young plants from:
a. both spores and seeds
b. spores only
c. seeds only
d. spores or seeds

33. Water carrying dissolved food materials for plants is taken in through their:
a. leaves
b. stems
c. roots
d. trunks

34. When air is heated it:
a. expands and is pushed up
b. contracts and is pushed up
c. expands and falls
d. contracts and falls

35. Disease germs are spread from sticky pads on the legs of a:
a. mosquito
b. fly
c. maggot
d. wriggler

36. A necessary part of every electric motor is:
a. bar magnet
b. U magnet
c. electro magnet
d. horseshoe magnet

37. Mosquito eggs are usually found:
a. in dry soil
b. in running water
c. in decaying food
d. floating in ponds

38. As we travel up a mountain the air becomes:
a. heavier
b. thinner
c. warmer
d. darker

39. The name of the earth's hardest natural mineral is:
a. granite
b. quartz
c. diamond
d. glass

40. A grasshopper's life is made up of:
a. one stage
b. two stages
c. three stages
d. four stages

41. Amphibians when young breathe through their:
a. gills
b. lungs
c. noses
d. body breathing holes

42. An instrument used to measure the pressure of the atmosphere is called a:
a. thermometer
b. barometer
c. scale
d. pump

43. Salamanders belong to the animal group called:
a. fish
b. reptiles
c. amphibians
d. mammals

44. The insulation on a wire must be:
a. a good conductor
b. a non-conductor
c. very thick
d. a metal

45. Oxygen is carried to all parts of the body by the:
a. lungs b. blood c. stomach d. heart

46. In the pupa stage an insect:
a. is an adult b. eats much food c. is generally quiet d. has wings for flying

47. We know that we call certain animals by the name mammals because:
a. they are known to be warm-blooded b. they are known to be cold-blooded
c. they can move about from place to place
d. their babies get milk from the mother's body

48. The name of a mineral our bodies need to grow is:
a. bone b. calcium c. protein d. nitrogen

49. A mineral made from the remains of ancient plants is:
a. coal b. uranium c. fossil d. mica

50. Which machine is used to make compressed air:
a. fan b. vacuum cleaner c. tire pump d. storage tank

51. When water freezes it help to make soil from rocks because the:
a. water shrinks b. water expands c. water runs away d. water evaporates

52. What fuel does our body use:
a. energy b. oxygen c. blood d. food

53. A maggot changes into a:
a. mosquito b. fly c. bacterium d. disease

54. A wriggler may someday become a:
a. mosquito b. fly c. bacterium d. disease

55. To help them use the food they make, green plants need:
a. oxygen b. nitrogen c. vapour d. carbon dioxide

56 Turtles belong to the animal group called:
a. mammals b. amphibians c. reptiles d. fish

57. When water vapour in the air touches something cool enough it:
a. evaporates b. condenses c. freezes d. boils

58. Maggots do a great deal of:
a. resting b. swimming c. flying d. eating

59. Which of the following does not need air:
a. water-lily b. stone c. mosquito d. fly

60. You could live without air for about:
a. 3 days b. 45 minutes c. 7 minutes d. one hour

ew Edition
Form B

ELEMENTARY SCIENCE TEST

EDMONTON PUBLIC SCHOOLS

GRADE V.

AME ..... DATE ..... SCORE .....

RECTIONS TO PUPILS: Study the sample questions before you begin the test.

AMPLE A.

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a. bird b. dog c. fish d. butterfly

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Which one of the following foods contains the most starch:
a. tomatoes b. lettuce c. bread d. egg yolk

Do the same in this question. Choose the BEST answer or the one you think is correct. Mark its answer your answer sheet with a heavy "X". As you see, the correct answer is "c".

On this page and the following pages are more questions which you are to do just like these. When told begin, you are to go right on from one page to the next until you finish the test.

. The animal protected by quills is the:
a. muskrat b. badger c. coyote d. porcupine

. Pollen is often carried from one plant to another by:
a. grasshoppers b. aphids c. bees d. other plants

. Electric wires that are not properly insulated are:
a. unsightly b. safe c. dangerous d. the best conductors

. The planetoids are found between the "paths" of:
a. Jupiter and Mars b. Saturn and Uranus c. Venus and Mercury d. Jupiter and Saturn

All electric heating appliances are alike in one way, because they have:
a. fuses b. elements c. transformers d. armatures

The part of the flower in which the seeds are produced is called the:
a. leaf b. stamen c. pistil d. stem

The animal that robs farmers of their grain is the:
a. weasel b. horse c. skunk d. gopher

We can see the moon because:
a. it is hot
b. it reflects light from the earth
c. it reflects light from the planets
d. it reflects light from the sun

The earth turns on its:
a. axle b. gravity c. equator d. axis

The planet about which the scientists know most is:
a. the moon b. Mars c. the earth d. Venus

11. Which animal does not hatch from eggs:
a. ant b. salmon c. whale d. turtle

12. An example of electricity produced by friction is:
a. light b. thunder c. lightning d. magnetism

13. At first, frictional electricity produced in a comb by combing your hair will act upon a piece of paper
a. repelling it b. igniting it c. discoloring it d. attracting it

14. Which insect is harmful to man:
a. ladybird beetle b. bee c. grasshopper d. silkworm moth

15. Which animal is an amphibian:
a. dog b. cow c. frog d. earthworm

16. When young, which of the following are usually most dependent upon their mothers:
a. fish b. insects c. reptiles d. mammals

17. When a comet approaches the sun its tail usually:
a. points toward the sun
b. becomes shorter and points away from the sun
c. becomes longer and points away from the su
d. disappears

18. Sometimes one end of a steel bridge rests on rollers because:
a. steel shrinks when heated by the sun
b. steel must be allowed to move in the wind
c. steel expands when heated by the sun
d. the rollers take up the shock of heavy truck

19. Which is the best conductor of heat:
a. wood b. asbestos c. iron d. cloth

20. Animals whose blood is usually at about the same temperature as the water or the air in which they live called:
a. cold-blooded b. warm-blooded c. red-blooded d. hot-blooded

21. Which is the best statement:
a. a compound is made of one element
b. a compound is made of two elements
c. a compound is made of three elements
d. a compound is made of more than one eleme

22. If we were to travel to the moon we would probably find:
a. strange people
b. no atmosphere
c. abundant plant growth
d. great oceans and seas

23. An eclipse of the sun is caused by:
a. Mercury casting its shadow upon the earth
b. the moon casting its shadow upon the sun
c. the moon casting its shadow upon the eart
d. the earth casting its shadow upon the moo

24. If someone's clothes catch fire the best thing to do is:
a. run to the nearest adult for help
b. wrap a cover tightly around the person
c. beat out the flames
d. roll him on the ground

25. The fuel most commonly used to heat homes in Edmonton is:
a. fuel oil b. natural gas c. propane d. methane

26. An animal which is cold-blooded is:
a. salamander b. dog c. robin d. man

27. Inside an ordinary electric light bulb there is:
a. oxygen b. mercury c. inert gas d. hydrogen

28. The third stage in the life of a butterfly is the:
a. chrysallis b. egg c. adult d. caterpillar

Which is a flowerless plant:
a. clover b. rose c. tulip d. fern

Workers stringing telephone lines on a very hot day should:
a. stretch the wires very slightly
b. let the wires sag
c. heat the wires before hanging
d. chill the wires before hanging

If the sun's pull of gravity should suddenly stop, the earth would probably:
a. fly off into space
b. fall into the sun
c. keep moving in its path around the sun
d. stop rotating

There is a "new moon" about once every:
a. year b. month c. 366 days d. two weeks

The paths in which the planets travel are called:
a. solar rays b. orbits c. light years d. axis

Distances in space are measured in:
a. orbits b. light years c. centuries d. eons

The planet nearest the sun is:
a. Venus b. Mercury c. Mars d. Jupiter

To test for starch you should:
a. use iodine
b. taste the material
c. heat the material
d. check the material to see if it is easily cut

An empty volleyball is placed on one side of a set of scales, and weights are added to the other side until balance is reached. Now air is pumped into the ball, and when it is put back on the scales:
a. the pan with the weights will go down
b. the pan with the ball will go down
c. the ball will still be balanced by the weights
d. the pan with the ball will go up

The best filament for an electric light bulb must be a:
a. poor conductor
b. good conductor
c. poor conductor that gets hot
d. poor conductor that gives off heat and light

Sometimes Venus is called the earth's twin because:
a. both Venus and the earth have one moon
b. both planets have the same length of year
c. Venus is the earth's closest planet
d. Venus and the earth are close to the same size

To test for an acid you use:
a. red litmus paper b. red blotting paper c. blue crepe paper d. blue litmus paper

A short circuit will often cause a wire to:
a. become very hot
b. become magnetized
c. contract
d. become radio-active

The centre of our solar system is the:
a. sun b. moon c. earth d. any of these

Molds are plants that:
a. have tiny flowers
b. do not make their own food
c. grow in dry places
d. make their own food

Elements can be in the form of:
a. only liquids b. only gases c. only solids d. planet

The greatest number of harmful fires are caused by:
a. human carelessness
b. spontaneous combustion
c. lightning
d. drought

46. Which of the following materials is not a compound:
a. water b. steel c. glass d. iron

47. In the Edmonton power plant, electricity is produced by:
a. batteries b. wet cells c. generators d. dry cells

48. In which of the following animal groups do the animals have only six legs:
a. spiders b. insects c. centipedes d. earthworms

49. Potatoes contain a great amount of:
a. starch b. sugar c. oil d. protein

50. Weasels are useful to man because they:
a. drive cattle away b. kill mice c. kill birds d. suck eggs

51. Buildings are usually protected from short circuits by:
a. transformers b. circuit breakers c. elements d. filaments

52. Water is a compound made of hydrogen and:
a. nitrogen b. oxygen c. carbon dioxide d. none of these

53. Some molecules can be seen with the aid of:
a. a telescope
b. radar
c. a powerful magnifying glass
d. an electron microscope

54. Our solar system contains:
a. seven known planets
b. ten known planets
c. nine known planets
d. eight known planets

55. When birds travel seasonally from one place to another we say that they:
a. hibernate b. cultivate c. migrate d. immigrate

56. A gas produced when wood burns is:
a. carbon dioxide b. oxygen c. helium d. nitrogen

57. A chemical change takes place when:
a. sugar is dissolved in water
b. water is allowed to freeze
c. wax is melted
d. a lump of coal is burned

58. In order to best ventilate a room with only one window, you should:
a. open the window at the bottom only
b. open the window at both bottom and top
c. open the window at the top only
d. close the cold-air register

59. Many fluorescent lamps contain:
a. mercury b. neon c. oxygen d. nitrogen

60. An element is:
a. the smallest particle of anything
b. always in metallic form
c. the simplest kind of material which is made itself
d. table salt or sugar

61. The man who invented the telegraph was:
a. Marconi b. Graham Bell c. Benjamin Franklin d. Samuel Morse

62. An electromagnet can be made stronger by:
a. using thicker wire
b. using fewer turns of wire
c. using more turns of wire
d. decreasing the voltage

The use of molds in making metal objects requires a physical change in the material from:

a. solid to liquid to solid
b. solid to liquid to gas
c. liquid to solid to liquid
d. gas to liquid to solid

A mixture of copper and tin is called:

a. brass
b. bronze
c. steel
d. zinc

The movements of the solar system:

a. are very regular
b. are very irregular
c. are unpredictable
d. cannot be measured

To remove salt from a salt and water mixture you would:

a. evaporate the water
b. strain the mixture
c. filter the mixture
d. shake the mixture rapidly

A glass containing ice water will become moist on the outside because:

a. some of the ice water seeps out through the glass
b. the cold glass cools the surrounding air, causing water vapour in the air to condense on it.
c. some of the ice water evaporates
d. the air is warmer than the glass and evaporation takes place more rapidly

Day and night are caused by:

a. the earth revolving around the sun
b. the earth rotating on its axis
c. the sun revolving around the earth
d. the tilting of the earth on its axis

When gases are heated, they:

a. contract
b. shrink
c. expand
d. condense

An electric current will flow only when the circuit is:

a. open
b. long
c. closed
d. short

An eclipse of the moon is caused by:

a. the earth casting its shadow upon the moon
b. the moon casting its shadow upon the sun
c. the moon casting its shadow upon the earth
d. Mercury casting its shadow upon the moon

Electricity can be produced by:

a. spark plug
b. a dry cell
c. a copper wire
d. switch

Molecules move about:

a. only in liquids
b. only in gases
c. only in solids
d. in all of these

In wet or dry cells electricity is produced by:

a. heat
b. physical action
c. magnetism
d. chemical action

The silver-coloured liquid in the tube of many thermometers is:

a. coloured alcohol
b. mercury
c. liquid silver
d. coloured water

By increasing the number of dry cells in series the current:

a. becomes stronger
b. becomes weaker
c. remains unchanged
d. travels faster

A material through which electric current will flow is called:

a. an insulator
b. an open circuit
c. a non-conductor
d. a conductor

Electricity produced by friction is called.

a. current electricity
b. static electricity
c. electrolysis
d. magnetism

A stream of water should NOT be used when kerosene, gasoline or oil catch fire because:

a. these fuels combine with the hydrogen in water
b. these fuels will turn the water to steam
c. these fuels are lighter than water and will float on top of it
d. the oxygen in the water combines with these fuels and so feeds the fire

80. The star which is closest to the earth is:
a. the moon b. Venus c. the North Star d. the sun

81. Cooking dishes are not made of lead because:
a. lead has a high melting point
b. lead will not conduct heat
c. lead has a low melting point
d. lead is too easily broken

82. The Big Dipper and Orion are examples of:
a. a Star b. a constellation c. the Milky Way d. a solar system

83. A combustible material is one which:
a. burns completely
b. catches fire easily
c. will burn
d. will not burn

84. An example of a combustible material is:
a. water b. glass c. wood d. air

85. Which of these materials has the lowest kindling temperature:
a. paper b. coal c. wood shavings d. cloth

86. An animal whose diet is mostly meat is called:
a. an herbivorous animal
b. a rodent
c. an amphibian
d. a carnivorous animal

87. The boiling point of water is:
a. 32° F. b. 98.6° F. c. 100° F. d. 212° F.

88. The part of the air which a fire needs in order to burn is:
a. nitrogen b. oxygen c. carbon dioxide d. water vapour

89. When any material burns:
a. no change takes place
b. only a physical change takes place
c. chemical and physical changes take place
d. oxygen is released into the air

90. An animal group whose young breathe through gills and whose adults breathe through lungs is:
a. fish b. reptiles c. amphibians d. mammals

91. The thermometer depends for its operation on the fact that:
a. mercury expands when cooled and shrinks when heated
b. mercury expands when heated and shrinks when cooled
c. mercury is much heavier than water
d. mercury is pushed up by pressure resulting from the weight of the air

92. To prevent loss of heat from a house, we use:
a. furnaces b. natural gas c. stucco d. insulation

93. Kindling temperature means the temperature at which:
a. ice melts
b. water boils
c. a substance catches fire
d. a thermostat cuts in

New Edition
Form B

ELEMENTARY SCIENCE TEST

EDMONTON PUBLIC SCHOOLS

GRADE VI.

NAME ..... DATE ..... SCORE .....

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1. An impression found in rock, of a plant or animal that lived a long, long time ago, is called a:
a. mussel b. fossil c. museum d. terrarium

2. It is safe to eat mushrooms that:
a. grow on trees
b. are found in woods
c. are brown under the top
d. are bought in stores

3. The lever is a:
a. simple machine b. complex machine c. compound machine d. recent invention

4. Hair grows on the body of a:
a. worm b. reptile c. mammal d. bird

5. As insects grow, they go through:
a. two changes
b. three or four changes
c. no changes at all
d. the same changes as reptiles

6. If a fossil of a sea animal were found in a rock on top of a mountain, it would indicate that:
a. dinosaurs existed
b. the land was once under water
c. the earth's surface never changes
d. some reptiles were once able to fly

7. A car's wheels skid on ice on a road because:
a. there isn't enough friction between the tire and the road
b. the motor is too powerful for the car
c. the engine of a car is always at the front
d. the wheels on the car are too small for the motor

8. The reptiles that roamed the earth more than a hundred million years ago are called:
a. fossils b. mammals c. dinosaurs d. amphibians

9. All living things are either:
a. plants or insects b. animals or birds c. birds or reptiles d. animals or plants

10. All sounds are alike in that:
a. they are caused by strings
b. they are made by vibrations
c. they are the same pitch
d. they travel at different speeds

11. An animal which helps protect your garden is a:
a. rabbit b. chipmunk c. porcupine d. frog or toad

12. An insect which is injurious to many plants is the:
a. mosquito b. deer fly c. aphid d. housefly

13. The instrument that tells a pilot in an airplane how high he is in the air is called the:
a. tachometer b. air-speed indicator c. altimeter d. fuel guage

14. A plant that is not found around ponds is the:
a. cat-tail b. cactus c. spike rush d. bulrush

15. A helicopter is different from an ordinary plane because:
a. it has two propellers
b. it has only one wing
c. it has a set of rotating blades on top
d. it has a rocket-type engine

16. An aircraft that can fly but has no engine is called:
a. a helicopter b. a propeller c. an amphibian d. a glider

17. When plants die and decay:
a. they turn into coal
b. they enrich the soil
c. they make the soil poorer
d. they evaporate completely

18. A roadway up a mountain is an example of:
a. a pulley b. an inclined plane c. a wheel and axle d. a lever

19. If a green plant is shut completely away from sunlight for a considerable time it:
a. makes starch very rapidly
b. loses its green color
c. manufactures more white sugar
d. stops taking in water

20. Bees help plants by:
a. eating the plant's leaves
b. destroying the pollen of a flower
c. gathering the flower's nectar
d. transferring pollen which causes fertilization

21. Domestic plants and animals are:
a. those raised and cared for by man
b. those that grow wild without care
c. those that are harmful to man
d. those never used by man

22. It takes less force to turn a nut with a long wrench than with a short wrench because the long wrench:
a. provides more leverage
b. is heavier
c. has wider jaws
d. fits better

23. A balanced aquarium must have plants in it:
a. to take carbon dioxide out of the water and put oxygen back into the water
b. to provide fresh green feed for the fish
c. to provide a place in which to hide
d. so there will be shade for the fish when the sun shines

24. White clothing is usually cooler than dark clothing because it:
a. weighs less
b. is more porous
c. is a better reflector of heat and light
d. absorbs the heat

25. Light travels at a speed of:
a. 186,000 miles per hour
b. 18,600 miles per hour
c. 186,000 miles per second
d. 18,600 miles per second

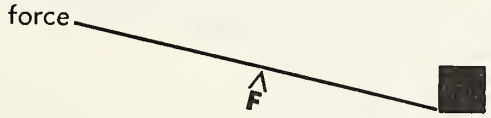
26. Airplanes can land on and take off from snow and ice when fitted with:
a. skis
b. pontoons
c. gliders
d. floats

27. Since mice provide food for a fairly large number of other animals they are able to maintain their numbers because:
a. they have such excellent protective coloring
b. they raise large families several times a year
c. they feed only on seeds that other animals doies
d. they can run fast enough to escape most enemn't use

28. A cloud that has formed near or on the earth's surface is called:
a. dew
b. snow
c. rain
d. fog

29. Under which of the following conditions does bread mould grow best:
a. hot and dry
b. cold and dry
c. cold and wet
d. warm and moist

30. In the following diagram of a lever the point F is the:



a. weight
b. fulcrum
c. force
d. weight arm

31. An object through which light can pass is said to be:
a. transparent
b. liquid
c. non-conductor
d. opaque

32. All living things are alike in that they:
a. grow from seeds
b. must have fur or hair
c. are reproduced from living things
d. must lay eggs to reproduce

33. A violin string produces sound because it:
a. vibrates
b. is tight
c. has resin
d. has a sounding board

34. A cold-blooded animal is the:
a. rat
b. trout
c. bat
d. mule

35. The freezing point of pure water is:
a. 100° F.
b. 32° F.
c. 212° F.
d. 232° F.

36. One of the following is a lung breather:
a. fish
b. bird
c. clam
d. worm

37. Living things have usually developed:
a. from complex forms to simple forms
b. only during periods of very warm climate
c. only during periods of very cold climate
d. from simplest forms to complex forms

38. A good example of a large prehistoric reptile is:
a. octopus
b. turtle
c. Tyranosaurus
d. elephant

39. We practice conservation when we:
a. protect and use our natural resources wisely
b. select and plant only the best quality of seeds
c. when we allow soil erosion to take place
d. gather wild birds' eggs for a collection

40. A lever is made up of a:
a. fulcrum
b. part where work is done
c. part where force is used
d. all three a, b, c

41. A bird that uses air currents to soar like a glider is the:
a. robin
b. gull
c. owl
d. ostrich

42. A plant that captures animals for food is the:
a. fungus
b. Venus Flytrap
c. vine creeper
d. poison oak

43. The eagle is well adapted to flesh-eating:
a. because it can soar high in the sky for long periods
b. because of its strong curved beak and powerful talons
c. because it can fly so silently
d. because it possesses very keen eyesight

44. The seeds of plants that depend mainly on the wind to help scatter them:
a. have wings or parachutes attached to them
b. come from pods that snap open when ripe
c. have tiny hooks attached to their outer skin
d. are round and smooth to move easily through the air

45. When animals are said to be warm-blooded we really mean:
a. the temperature of their blood always stays about the same
b. the temperature of their blood is very warm
c. they have a warm covering such as fur
d. their blood is warm on warm days but cold on cold days

46. The time it takes light to reach us from the sun is about:
a. 8 minutes
b. 8 hours
c. 8 days
d. 80 days

47. Groups of plants that cannot make their own food are the:
a. fungi
b. mosses
c. root vegetables
d. vines

48. Which one of the following is almost extinct:
a. starling
b. the seal
c. mallard duck
d. whooping crane

49. We cannot hear a dog whistle because the vibrations are:
a. too slow
b. too low
c. too fast
d. too weak

50. When a mixture of rain and snow falls it is called:
a. rain
b. hail
c. fog
d. sleet

51. The flower part least necessary in the production of seed is the:
a. petal
b. pistil
c. pollen
d. stamens

52. Light travels:
a. at a slow speed
b. in a straight line
c. inward from its source
d. in curved lines

53. When the fulcrum of a lever is close to the weight:
a. the weight is harder to lift
b. the weight cannot be lifted at all
c. you need extra help to lift the weight
d. the weight is easier to lift

54. The plants that provide the most food for herbivorous animals are the:
a. grasses
b. broad-leafed trees
c. conifers
d. root vegetables

55. We can make a wheel turn on its bearings more easily:
a. by increasing the friction in the bearing
b. by allowing friction to make it hot
c. by making surfaces that touch as smooth as possible
d. by keeping the touching parts rough

56. Rain always falls:
a. when clouds form over mountain tops
b. when the sun causes water to evaporate
c. when drops of water in the air freeze
d. when the air can hold no more water vapour at that temperature

57. A color that is not in a rainbow is:
a. red b. orange c. yellow d. pink

58. We can see things because:
a. they do not reflect light
b. they do not give off light
c. they reflect or give off light
d. they absorb light

59. A floating green plant found in ponds is the:
a. dandelion b. reeds c. duckweed d. cattail

60. What do lenses do to light:
a. they stop it from going further
b. they increase or decrease the apparent size of an object
c. make light rays travel more slowly
d. break light up into the colors of the rainbow

61. An insect that migrates is the:
a. mosquito b. spider c. housefly d. monarch butterfly

62. Friction:
a. is always bad when work is to be done
b. is increased by the use of ball bearings
c. causes materials to wear out or become hot.
d. causes less effort to be used to do work

63. Sound in air travels:
a. much faster than light
b. at about 1100 ft. per minute
c. fastest in a vacuum
d. at about 1100 ft. per second

64. Water evaporates from the earth as:
a. small droplets of water
b. an invisible vapor
c. currents of air
d. a cloud near the surface

65. Rain, hail or snow is called:
a. condensation b. precipitation c. evaporation d. migration

66. One of the following animals lays eggs and sits on them to hatch the young:
a. housefly b. turkey c. crocodile d. kangaroo

67. Which one of the following plants adds nitrogen to the soil:
a. milkweed b. barley c. clover d. wheat

68. The principal reason for oiling machinery is to:
a. reduce friction
b. stop squeaking
c. make work for mechanics
d. increase compression

69. Grass crops help prevent:
a. soil erosion b. irrigation c. drought d. cultivation

70. Bacteria reproduce by:
a. cell division b. forming buds c. laying eggs d. pollination

71. A water-loving animal that depends upon other members of its group for help and protection is the:
a. beaver b. giant water beetle c. salmon d. otter

72. The glowing wire in a light bulb is made of:
a. iron b. copper c. tungsten d. nickel

73. Most living things begin as:
a. seed b. an egg c. a single cell d. a bulb

74. Bees and wasps belong to a group of animals called:
a. destructive animals b. predatory animals c. social animals d. aquatic animals

75. An object which permits light to pass through it, but not enough that one can see through it, is said to be:
a. transparent b. opaque c. translucent d. luminous

76. Which of the following has vocal cords:
a. frog b. bird c. grasshopper d. click beetle

77. Animals that live one part of their life cycle in water and the other parts of the cycle on land, are called:
a. amphibians b. reptiles c. amoeba d. insects

78. The moose belongs to a group of animals called:
a. herbivorous b. omnivorous c. insectivorous d. carnivorous

79. Clouds form only:
a. when water vapor in the air is cooled and condenses
b. over large bodies of water on bright sunny days
c. when the temperature drops below freezing point
d. when it is raining

80. Except for atomic energy (nuclear energy) the source of all power and light used on earth is:
a. oil b. the sun c. electricity d. coal

81. All ferns grow from:
a. pollen b. rust c. seeds d. spores

82. The body of an airplane is called the:
a. pontoon b. fuselage c. monoplane d. engine

83. When the sun's rays pass through a clear material such as air, water, or clear glass, the material:
a. is cooled greatly c. is heated greatly
b. is heated very little d. becomes stained

84. The only true flying mammal is the:
a. squirrel b. eagle c. flying fish d. bat

85. Some kinds of plants that cause disease in other plants are:
a. weeds b. grains c. bacteria d. legumes

86. A seed is a tiny plant:
a. that has stored food and has a cover for protection
b. that never will grow
c. that can grow without water
d. that germinates only in fertile soil

87. A characteristic of nearly all reptiles is that they:
a. crawl along the ground c. hatch from eggs
b. are invertebrates d. live in the water

88. The energy needed by green plants to manufacture food comes from the:
a. water b. soil c. sun d. fertilizer

89. A glider stays in the air:
a. by being catapulted into the air
b. by using warm air currents pushed up from the earth
c. because it is lighter than air
d. because it is pushed by a jet engine

90. A liquid is changed to a gas by:
a. condensation
b. evaporation
c. precipitation
d. saturation

91. Winds and updrafts are caused by:
a. rotation of the earth
b. differences in air pressure
c. position of the moon
d. land and sea breezes

92. Objects such as clothing and flowers appear colored because:
a. they reflect certain light rays and absorb others
b. they reflect all light rays
c. they absorb the colors that we see
d. the light rays are bent

93. After the Age of Reptiles, when the dinosaurs roamed the earth, came:
a. the Age of Fishes
b. the Age of Tribolites
c. the Age of Amphibians
d. the Age of Mammals

94. An airplane stays up in the air:
a. when the lift is greater than the force of gravity
b. when the drag is greater than the thrust
c. when the thrust is greater than the force of gravity
d. when the force of gravity is greater than the lift

95. Which one of these plants does not grow from spores:
a. ferns
b. mosses
c. mushrooms
d. poppy

96. Which one is the least social of the following animals:
a. dog
b. bee
c. beaver
d. man

97. Which animal is not a mammal:
a. whale
b. gopher
c. lion
d. penguin

98. A screw is an example of:
a. an inclined plane
b. a lever
c. a wedge
d. a pulley

99. The best statement is that:
a. sound waves cannot be controlled
b. sound waves can be controlled
c. only some sound waves can be controlled
d. some sound waves are too slow to control

100. Which plant does not contain chlorophyll:
a. mould
b. cactus
c. geranium
d. dandelion

101. The cow, the horse, the camel, and the sheep all provide man with:
a. clothing
b. method of travelling
c. power for working
d. a protection from enemies

102. Which was the first class of animals to develop backbones:
a. fish
b. amphibians
c. sponges
d. mammals

103. We call a scientist who studies weather, gathers information about weather conditions and predicts what the weather will be:
a. a biologist
b. a meteorologist
c. an astronomer
d. a zoologist

104. Warm air is pushed upward by:
a. colder, lighter air which sinks
b. colder, heavier air which sinks
c. colder air, which also rises
d. more warm air which sinks

105. The loudness of sound depends on:
a. an increase in pitch
b. a decrease in the number of vibrations per second
c. the force with which the object is vibrating
d. the material which is made to vibrate

106. A "vertebrate" is an:
a. animal having a backbone
b. animal with many legs
c. animal without a backbone
d. animal with few legs

107. A good example of a carnivorous animal is the:
a. polar bear
b. beaver
c. mouse
d. antelope

108. The best meaning of work is:
a. a force applied through distance
b. the amount of force applied
c. amount of energy needed to raise 1 lb. through a distance of 1 ft.
d. a transfer of energy from one place to another

109. Sunlight is composed of:
a. complimentary colors
b. colors of the rainbow
c. tints
d. the prism

110. Fluorescent light tubes differ from ordinary light bulbs in that they:
a. are brighter
b. are safer
c. have no filament
d. require more electricity

111. To measure the pressure of air, the weatherman uses an instrument called:
a. a thermometer
b. a hygrometer
c. a barometer
d. an anemometer

112. Horses that we have today are descendants of the:
a. Eohippus
b. Mastadon
c. Pterodactyl
d. Moa

113. When sun rays strike materials through which they cannot pass, the energy in these rays is changed to:
a. light
b. heat
c. ashes
d. carbon

114. In order to survive, plants and animals must:
a. remain the same
b. adapt to their environment
c. continually move from one environment to another
d. reproduce their kind in large numbers

115. Warm air can hold:
a. less water vapor than cold air
b. no water vapor at all
c. more water vapor if the sky is cloudy
d. more water vapor than cold air

116. An instrument to measure wind speed is the:
a. barometer
b. thermometer
c. anemometer
d. micrometer

117. Earthworms breathe by means of:
a. lungs
b. osmosis
c. spiracles
d. nostrils

118. Echoes in a room are reduced by:
a. wood walls
b. soft curtains
c. brick walls
d. glass walls

119. The correct statement is:
a. frost is rain that has fallen and frozen
b. water vapor freezes and makes snow
c. raindrops freeze to form dew
d. fog evaporates and becomes rain

120. A winter visitor to our area that feeds on berries of the mountain ash is the:
a. sparrow b. cedar waxwing c. magpie d. snowy owl

121. Most species of fish depend for survival upon:
a. their ability to escape
b. hiding in deep water
c. laying their eggs in deep water
d. laying large numbers of eggs

122. Temperature of the air is always changed:
a. by the moon being hidden by clouds
b. by the sun being hidden by clouds
c. by the humidity of the air
d. by the direction of the wind

123. The cycad tree is known to be the:
a. first plant to produce true seeds
b. first plant with true leaves
c. first flowering plant
d. first plant with roots

124. A plant that grows during one season and produces its seeds during the next season is called a:
a. semi-annual b. biennial c. annual d. centennial

125. All animals depend, for food, upon
a. green plants b. nitrogen c. other animals d. insects

126. To measure the humidity of the air the weatherman uses an instrument called:
a. a thermometer b. a hygrometer c. a barometer d. an anemometer

127. The one that is not a simple machine is the:
a. wedge b. pulley c. wheel d. lever

128. A very important substance used by plants in food making is:
a. oxygen b. nitrogen c. carbon dioxide d. carbon monoxide

129. Hail is most likely to come from:
a. a flat-bottomed fluffy cumulus cloud
b. very high fleecy cumulo-cirrus clouds
c. a thunder-head or cumulo-nimbus cloud
d. a thick layer of low stratus clouds

130. A rainbow is caused by light being:
a. refracted b. deflected c. reflected d. inflected

Directions: Read sample paragraph A carefully.

A

America was discovered for Spain by an Italian sailor, Columbus, in 1492. Shortly after this another Italian sailor, John Cabot, sailing from England, reached the coast of Labrador. Still later the country was explored by the French sailor, Cartier, and the Spanish explorers, Cortez and Ponce de Leon. America could be reached only by a long and dangerous voyage across the Atlantic ocean in small wooden sailing vessels.

A

1. The paragraph is mainly about
1. Columbus 2. Labrador 3. crossing the Atlantic 4. discovery and exploration of America 5. Spain - - - - 1. _4_

2. By whom was America discovered for Spain? 1. John Cabot 2. Cartier 3. Columbus 4. Cortez 5. Ponce de Leon - - - - - - - 2. ____

3. The early explorers came to America in 1. steamboats 2. sailboats 3. airplanes 4. canoes 5. rowboats - - - - - - - - - 3. ____

4. The early explorers of America were 1. foolish 2. weak 3. cowardly 4. brave 5. fearful - - 4. ____

Beginning with paragraph 1 below, read each paragraph carefully, then find the **one** word or phrase that is true for each question or statement at the right of the paragraph and put its number in the space at the right as in the samples above. You may read the paragraph **more than once** if you need to do so.

1

When Benjamin Franklin was seven years old his friends on a holiday filled his pockets with coppers. He at once went to a shop where whistles were sold and gave all his money for one. He whistled all the way home and went whistling all over the house. When his brothers and sisters saw it they laughed at him for paying four times as much for it as it was worth. When they kept telling him of all the good things he might have bought with the rest of the money, it made him cry.

1

1. When Benjamin tried his new whistle he was 1. sad 2. pleased 3. angry 4. afraid 5. ashamed - - 1. ____

2. Benjamin was given a pocketful of coppers by his 1. brothers 2. father 3. friends 4. sisters 5. grandmother - - - - - - - - 2. ____

3. Benjamin was given a pocketful of coppers 1. for his sisters 2. on his birthday 3. for working 4. for a whistle 5. on a holiday - - 3. ____

4. When his brothers made fun of his spending his coppers Benjamin felt 1. vexed 2. happy 3. afraid 4. important 5. wise - - 4. ____

5. Benjamin was given 1. a spanking 2. a whistle 3. a copper toy 4. some money 5. a party - - 5. ____

2

"What is that brass thing hanging over your fireplace?" asked Agnes.

"That," said her grandmother, "is a warming pan. In the old days bedrooms were very cold in winter. Many a time I have found the water in my pitcher hard as a rock. Just before we went to bed, red hot coals were put in the pan and the cover shut down. Then mother would put it between the sheets and move it up and down."

2

6. The paragraph is mainly about 1. Agnes 2. her grandmother 3. the cold of winter 4. a fireplace 5. a warming pan - - - - - - - 6. ____

7. The warming pan of Agnes' grandmother was made of 1. iron 2. wood 3. brass 4. tin 5. silver 7. ____

8. The old warming pans were made hot by filling them with 1. coals 2. kerosene 3. hot water 4. ashes 5. hot stones - - - - - 8. ____

9. A warming pan was used to 1. iron 2. warm a bed 3. bake 4. warm a room 5. boil water - - 9. ____

10. When Agnes' grandmother was young she slept in a bedroom that in winter was 1. always warm 2. heated 3. cool 4. freezing cold 5. warmed from the kitchen - - - 10. ____

Continue on next page

3

John Constable was born in the delightful village of East Berghold, England, in 1776. His father was a well-to-do miller. Until he was seventeen John was in school, studying part of the time with a delightful old clergyman. His best friend in those early days was the village plumber, who was the only one in East Berghold who had a feeling for art or an understanding of it. During spare hours John painted landscapes in the fields with him. His father wished John to become a clergyman but gave up the idea and took his son into the mill with him. His spare time was spent with the plumber-painter or else in painting in a small room he had hired in the village. When John was nineteen a nobleman visiting the neighborhood saw and admired his attempts at painting. This encouraged his father to let him go to London. At twenty-four he was admitted as a student of painting to the Royal Academy. He was married in 1816, three years later became an associate of the Royal Academy and ten years later a member.

4

All the able-bodied men in Western New Hampshire had gone to the war. Only the old men and boys were left. But now they too were needed to defeat Burgoyne, and every one volunteered. Nahum Prince, alone, among the boys over thirteen, could not go. Even when he appeared with a Queen Anne rifle the doctor said he could not walk a mile. He had to do something, however, so he started splitting old widow Corliss' wood for her. Suddenly four horsemen appeared. When one of them asked Nahum the way to the blacksmith shop Nahum told him he could set a shoe. Nahum lighted up the fire, blew the coals hot and set the horse's shoe. The next week when the boys came home and told how Colonel Warner came up on his horse just in time, leading the First Regiment, and how he took the prisoners and won the day, Nahum didn't say anything but he knew that Colonel Warner would not have been on that horse to end the Battle of Bennington successfully if he hadn't set that shoe.

5

Born in Pennsylvania, Daniel Boone drifted into North Carolina and settled on what was then the extreme frontier. The Allegheny Mountains marked a boundary beyond which the settlers did not go, for west of them lay dense forests inhabited only by bands of warriors. In 1769, Boone with a few companions crossed the mountains into the land of

3

11. What is the paragraph mainly about? 1. a clergyman 2. a plumber 3. an English painter 4. a miller 5. East Berghold - - - - - - 11. ____

12. While a boy John Constable painted 1. during his spare hours 2. at home 3. in school 4. most of the time 5. at night - - - - - - 12. ____

13. John Constable's closest friend was 1. his father 2. the miller 3. the old clergyman 4. the village plumber 5. a nobleman - - - - 13. ____

14. John Constable became a 1. great clergyman 2. skillful plumber 3. industrious miller 4. nobleman 5. great painter - - - - - - - - 14. ____

15. When John was a boy his father wanted him to become a 1. painter 2. clergyman 3. plumber 4. miller 5. nobleman - - - - - 15. ____

16. Which of these words best describes the relation between John Constable and the village plumber? 1. antagonistic 2. hostile 3. indifferent 4. suspicious 5. companionable - - - - - - - 16. ____

17. The only person in East Berghold besides John Constable interested in art was 1. the plumber 2. the miller 3. the clergyman 4. John's father 5. the school teacher 17. ____

4

18. How many men rode up to Nahum on horseback? 1. one 2. two 3. four 4. ten 5. a regiment 18. ____

19. Nahum Prince was 1. a girl 2. older than 13 3. an old man 4. less than 13 5. a widow - - 19. ____

20. Who was the man whose horse's shoe Nahum set? 1. the doctor 2. Burgoyne 3. the blacksmith 4. Colonel Warner 5. a captain - 20. ____

21. Why did not the blacksmith set the shoe for the horsemen? 1. he was eating dinner 2. the place had no blacksmith 3. he had gone to war 4. he was sick 5. it was too late at night - - - - - - - - - 21. ____

5

22. Among the wild animals found in smallest numbers in Kentucky were the 1. bison 2. wolf 3. deer 4. bear 5. elk - - - - - - - - 22. ____

23. Daniel Boone was chiefly a 1. soldier 2. politician 3. surveyor 4. hunter 5. trader - - - - - 23. ____

Continue on next page

groves and glades and running waters where forests grew tall and beautiful and where roamed innumerable herds of bison and elk, bands of deer, numerous black bears and occasionally a wolf or cougar. Kentucky was not then owned by any Indian tribe and was visited only by wandering war parties or hunting parties from north of the Ohio or south of the Tennessee. The next few years Boone spent in this region as surveyor and leader of the settlers amid unending conflicts in which two of his sons were killed. After Kentucky became settled he grew restless, crossed the Mississippi and settled on the border of the prairie country of Missouri, where he remained a backwoods hunter to a great age.

24. Daniel Boone was a man who liked 1. fighting Indians 2. being in a crowd 3. living alone 4. the ease of civilization 5. to contend with nature 24. _____

25. Daniel Boone was a man of 1. simplicity 2. cruelty 3. genius 4. conviviality 5. hastiness - - - 25. _____

26. Among the wild animals found in largest numbers in Kentucky were the 1. deer 2. cougars 3. black bears 4. elks 5. wolves - 26. _____

6

For three long seasons Jack had never missed a practice on the second team while waiting for his chance as a substitute on the regular football team. Time out had been taken and when the trainer rushed out on the field with his emergency kit, the captain asked him to tell the coach to send Jack on the field. With the prancing gait of a racehorse coming up to the barrier, Jack, breathless, reached the team, which was huddled together talking over the situation. "Take off your pants," said the captain, "and give them to Dick; his are badly torn. You can put his on." Without a word Jack trotted back to the bench, holding tightly to the torn moleskins, which all but dropped off him as he ran.

6

27. When Jack found that only his pants were wanted he must have felt very 1. joyous 2. thankful 3. chagrined 4. amused 5. important 27. _____

28. Jack's practice had been 1. excellent in quality 2. faithful 3. improving rapidly 4. useless to anyone 5. only half-heartedly done 28. _____

29. When the spectators saw Jack coming back they were probably 1. angry 2. resentful 3. elated 4. chagrined 5. amused - - - - 29. _____

7

Originally a Greek tribe lived in several clan villages in the valleys around some hilltops. On the hill was the place of common worship. A wall around the temple easily turned it into a citadel. In hilly Greece many of these citadels grew up close together. Very early some of the tribes combined into larger groups. Sometimes a stronger tribe would conquer the others, make them tear down their citadels and move their temples to its citadel. This is the way Theseus is said to have enlarged Athens, by taking into it the four Ionic tribes of Attica. All the inhabitants continued to be free citizens of Attica and became Athenians. In Laconia, however, the other tribes were conquered and held in subjection by Sparta. The inhabitants of Laconia were never granted citizenship nor did they ask for it. They wanted to recover their independence. Lycurgus made Sparta an army to hold them down. In other territories as large as Attica and Laconia there were several independent cities. In Boeotia, for instance, there were twelve independent cities, all rivals of one another.

7

30. Athens was the chief city of 1. Attica 2. Sparta 3. Boeotia 4. Laconia 5. Lycurgus - - - - 30. _____

31. The chief city of Laconia was 1. Athens 2. Perseus 3. Sparta 4. Boeotia 5. Lycurgus - - - - 31. _____

32. What feeling did the cities of Boeotia have toward one another? 1. helpfulness 2. kindness 3. bitterness 4. jealousy 5. ridicule - - - - - 32. _____

33. Of what was Sparta the principal city? 1. Attica 2. Laconia 3. the Athenians 4. Boeotia 5. the Ionic tribes - - - - - - 33. _____

Continue on next page

8

The Chinese work hard for a living but when they have enough to live on, they live on it, going to the theatre, listening to a scholar, admiring art of an earlier time or leisurely walking in beautiful scenery, instead of trying to augment their wealth, as many Westerners do, to buy works of art at fabulous prices to impress their neighbors. Among ourselves the people who are regarded as moral luminaries are those who forego pleasures themselves and find compensation in interfering with the pleasure of others. In China a man is expected to be respectful to his parents, kind to his children, generous to poor relations, and courteous to all — duties not very difficult to fulfill but actually carried out. They admit in theory that there are occasions when it is proper to fight, and in practice that these occasions are so rare that military leaders who appeal to force find that no one, not even their own soldiers, take them seriously; whereas we hold in theory that there are no occasions when it is proper to fight and in practice devote a part of the wonderful skill and efficiency we develop in manufacture to the making of guns, poison gases and airplanes to kill each other wholesale, while the rest is devoted to the making of ships, automobiles, telephones and other means of living luxuriously at high pressure.

8

34. People of the western nations seem most to admire 1. riches 2. learning 3. art 4. sincerity 5. courtesy - - - - - - - - - 34. ___

35. The Chinaman's code of ethics inspires him to 1. want to change others 2. dominate others 3. fight for an opinion 4. interfere with the impulses of others 5. respect the freedom of others - - - - - - 35. ___

36. As compared with the Chinese, the people of the western nations are more 1. energetic 2. respectful 3. contented 4. courteous 5. happy 36. ___

9

The one fact which restricts the mode of life and nutrition of the fungi is the absence of chlorophyll and their consequent dependence on outside supplies of organic carbon and in many cases of organic nitrogen. Fungi are, therefore, compelled to live on materials derived from other plants or from animals, and are either parasites on living organisms or saprophytes living on their dead. The large majority are the latter and they, with the bacteria, are the great agents of decay in nature, the moulds attacking the fallen leaves and branches and the bodies of dead animals as well as stale foods and damp clothing. The fungi afford some of the best instances of symbiosis or the living together of dissimilar organisms like the lichens and algae, in which an alga receives from the fungus water and inorganic substances and sometimes protection from desiccation, while the fungus derives its organic food supply from the alga Another form of association between fungi and higher plants, known as mycorhizas, consists of the fungi growing in intimate relation with or within the cells of the roots of higher plants. In the case of the orchids which are devoid of chlorophyll and must therefore depend for their whole supply of organic food on the humus in which they live, there is no evidence that the plants are able to undertake this absorption in the absence of the fungus.

9

37. The paragraph is mainly about the 1. things fungi attack 2. the harm fungi do 3. different kinds of fungi 4. way fungi live 5. what foods fungi need - - - - - - - - - 37. ___

38. Fungi are 1. always harmless 2. necessary for the growth of some plants lacking chlorophyll 3. necessary for the growth of all plants 4. always beneficial 5. harmful to the algae - 38. ___

39. One of the causes of things rotting is 1. lack of chlorophyll 2. organic carbon 3. bacteria 4. symbiosis 5. mycorhizas - - - 39. ___

40. The process by which fungi help the roots of higher plants to function is called 1. parasites 2. symbiosis 3. saprophytes 4. decay 5. mycorhizas - - - - - - - - 40. ___

Number right ____

End of Reading test. Look over your work.

Directions: Read sample paragraph A carefully.

A

Ellen's father was a miner and dug iron ore out of the ground, but her grandfather was a blacksmith and made iron nails. Each day while her grandmother knit stockings and her mother spun the wool, Ellen sat by the forge and watched the iron turn to a soft red color in the fire. Then her grandfather would take the iron out of the fire and hammer it on an anvil into long, smooth nails.

A

1. The story is mainly about 1. Ellen 2. making iron 3. knitting stockings 4. Ellen's grandfather 5. night time 1. ....2....
2. Where did the iron ore come from? 1. the fire 2. the woods 3. the ground 4. the chimney 5. an anvil 2. .....
3. Who knit the stockings? 1. Ellen 2. an Indian girl 3. Ellen's mother 4. a slave girl 5. Ellen's grandmother 3. .....
4. Ellen's mother 1. dug the iron ore 2. knit stockings 3. hammered 4. spun wool 5. sat by the chimney 4. .....
5. Ellen's grandfather made 1. hammers 2. iron ore 3. stockings 4. nails 5. a fire 5. .....

Beginning with paragraph 1 below, read each paragraph carefully, then draw a line under the one word or phrase that is true for each question or statement at the right of the paragraph and put its number in the space at the right as in the samples above. You may read the paragraph more than once if you need to do so.

1

In olden times when women wove the cloth for their families people had so much respect for the work of spinning and weaving that they had a goddess of spinning named Minerva. There was a young woman named Arachne who did such beautiful work in spinning and weaving that people came a long way to see it. At last she boasted, "I can do better work than any woman in the world. Minerva herself cannot do better work than I can."

1

1. Arachne's work was very 1. careless 2. poor 3. ugly 4. beautiful 5. dirty 1. .....
2. In olden times spinning and weaving was done in 1. homes 2. stores 3. factories 4. mills 5. churches 2. .....
3. In olden times spinning and weaving was done by 1. slaves 2. servants 3. women 4. men 5. boys 3. .....
4. Arachne was a 1. witch 2. goddess 3. old woman 4. little girl 5. young woman 4. .....
5. The praise of Arachne's work made her very 1. humble 2. proud 3. careless 4. cruel 5. wise 5. .....

Continue on next page

2

One morning while Aaron and Peter Hite were picking berries near their colonial home, painted savages suddenly sprang up in the bushes around them. Before they could cry out they were seized and carried off on a hurried march toward the home of the warriors. Aaron, who was tall and strong, managed to keep up with the warriors. But Peter, who was small and delicate, could not walk as fast as the rest. Whenever he fell behind he was kicked and beaten and prodded with tomahawks to hasten his speed.

2

6. The paragraph is mainly about
   1. Indians 2. Peter Hite
   3. the capture of Peter and Aaron
   4. a march 5. warriors — 6. .....

7. When Aaron and Peter were missed their father and mother must have felt very
   1. joyful 2. amused 3. proud
   4. thankful 5. worried — 7. .....

8. Peter was treated
   1. kindly 2. cruelly 3. mildly
   4. gently 5. tenderly — 8. .....

9. Aaron and Peter were captured by
   1. Indians 2. the British 3. thieves
   4. bears 5. the French — 9. .....

10. When Aaron saw how his brother was being treated he must have been
    1. amused 2. happy 3. joyful
    4. angry 5. thrilled — 10. .....

11. Peter must have felt very
    1. bitter 2. happy 3. joyful
    4. thankful 5. lonely — 11. .....

3

"What is that brass thing hanging over your fireplace?" asked Agnes.

"That," said her grandmother, "is a warming pan. In the old days bedrooms were very cold in winter. Many a time I have found the water in my pitcher hard as a rock. Just before we went to bed red-hot coals were put in the pan and the cover shut down. Then mother would put it between the sheets and move it up and down."

3

12. The paragraph is mainly about
    1. Agnes 2. her grandmother
    3. the cold of winter 4. a fireplace
    5. a warming pan — 12. .....

13. Agnes was at her
    1. home 2. grandmother's 3. aunt's
    4. cousin's 5. sister's — 13. .....

14. The warming pan hung
    1. in the kitchen 2. in the bedroom
    3. in a closet 4. over the fireplace
    5. in a corner — 14. .....

15. The warming pan of Agnes' grandmother was made of
    1. iron 2. wood 3. brass 4. tin
    5. silver — 15. .....

16. The old warming pans were made hot by filling them with
    1. coals 2. kerosene 3. hot water
    4. ashes 5. hot stones — 16. .....

17. When Agnes' grandmother was young she slept in a bedroom that in winter was
    1. always warm 2. heated 3. cool
    4. freezing cold 5. warmed from the kitchen — 17. .....

Continue on next page

4

When Benjamin Franklin was seven years old his friends on a holiday filled his pockets with coppers. He at once went to a shop where whistles were sold and gave all his money for one. He whistled all the way home and went whistling all over the house. When his brothers and sisters saw it they laughed at him for paying four times as much for it as it was worth. When they kept telling him of all the good things he might have bought with the rest of the money, it made him cry.

5

John Constable was born in the delightful village of East Berghold, England, in 1776. His father was a well-to-do miller. Until he was seventeen John was in school, studying part of the time with a delightful old clergyman. His best friend in those early days was the village plumber, who was the only one in East Berghold who had a feeling for art or an understanding of it. During spare hours John painted landscapes in the fields with him. His father wished John to become a clergyman but gave up the idea and took his son into the mill with him. His spare time was spent with the plumber-painter or else in painting in a small room he had hired in the village. When John was nineteen a nobleman visiting the neighborhood saw and admired his attempts at painting. This encouraged his father to let him go to London. At twenty-four he was admitted as a student of painting to the Royal Academy. He was married in 1816, three years later became an associate of the Royal Academy and ten years later a member.

6

Born in Pennsylvania Daniel Boone drifted into North Carolina and settled on what was then the extreme frontier. The Allegheny mountains marked a boundary beyond which the settlers did not go for west of them lay dense forests inhabit-

4

18. When Benjamin tried his new whistle he was
    1. sad 2. pleased 3. angry 4. afraid 5. ashamed — 18. .....
19. Benjamin was given a pocket full of coppers by his
    1. brothers 2. father 3. friends 4. sisters 5. grandmother — 19. .....
20. Benjamin was given a pocket full of coppers
    1. for his sisters 2. on his birthday 3 for working 4. for a whistle 5. on a holiday — 20. .....
21. When his brothers made fun of his spending his coppers Benjamin felt
    1. vexed 2. happy 3. afraid 4. important 5. wise — 21. .....
22. Benjamin was given
    1. a spanking 2. a whistle 3. a copper toy 4. some money 5. a party — 22. .....
23. When he was a boy of seven Benjamin Franklin was
    1. mischievous 2. thriftless 3. thrifty 4. stingy 5. miserly — 23. .....

5

24. What is the paragraph mainly about?
    1. a clergyman 2. a plumber 3. an English painter 4. a miller 5. East Berghold — 24. .....
25. John Constable became a
    1. great clergyman 2. skillful plumber 3. industrious miller 4. nobleman 5. great painter — 25. .....
26. When John was a boy his father wanted him to become a
    1. plumber 2. clergyman 3. painter 4. miller 5. nobleman — 26. .....
27. Which of these words best describe the relation between John Constable and the village plumber?
    1. antagonistic 2. hostile 3. indifferent 4. suspicious 5. companionable — 27. .....
28. The only person in East Berghold besides John Constable interested in art was
    1. the plumber 2. the miller 3. the clergyman 4. John's father 5. the school teacher — 28. .....

6

29. In Daniel Boone's time Kentucky was mainly a
    1. plain 2. prairie 3. forest 4. land of flowers 5. land of mountain peaks — 29. .....

Continue on next page

ed only by bands of warriors. In 1769 Boone with a few companions crossed the mountains into the land of groves and glades and running waters where forests grew tall and beautiful and where roamed innumerable herds of bison and elk, bands of deer, numerous black bears and occasionally a wolf or cougar. Kentucky was not then owned by any Indian tribe and was visited only by wandering war parties or hunting parties from north of the Ohio or south of the Tennessee. The next few years Boone spent in this region as surveyor and leader of the settlers amid unending Indian conflicts in which two of his sons were killed. After Kentucky became settled he grew restless, crossed the Mississippi and settled on the border of the prairie country of Missouri, where he remained a backwoods hunter to a great age.

30. The settlers did not go west of the Allegheny Mountains because of the
1. mountains 2. forest 3. wild animals
4. marauding Indians 5. Indian owners *30.* .....

31. Among the wild animals found in smallest numbers in Kentucky were the
1. bison 2. wolf 3. deer 4. bear
5. elk *31.* .....

32. Daniel Boone was chiefly a
1. soldier 2. politician 3. surveyor
4. hunter 5. trader *32.* .....

33. Daniel Boone was a man who liked
1. fighting Indians 2. being in a crowd
3. living alone by himself
4. the ease of civilization
5. to contend with nature *33.* .....

7

For three long seasons Jack had never missed a practice on the second team while waiting for his chance as a substitute on the regular football team. Time out had been taken and when the trainer rushed out on the field with his emergency kit, the captain asked him to tell the coach to send Jack on the field. With the prancing gait of a racehorse coming up to the barrier, Jack, breathless, reached the team, which was huddled together talking over the situation. "Take off your pants," said the captain, "and give them to Dick; his are badly torn. You can put his on." Without a word Jack trotted back to the bench, holding tightly to the torn moleskins which all but dropped off him as he ran.

7

34. When Jack found that only his pants were wanted he must have felt very
1. joyous 2. thankful 3. chagrined
4. amused 5. important *34.* .....

35. Jack's practice had been
1. faithful 2. excellent in quality
3. improving rapidly
4. useless to anyone
5. only halfheartedly done *35.* .....

36. When the spectators saw Jack coming back they were probably
1. angry 2. resentful 3. elated
4. chagrined 5. amused *36.* .....

8

Originally a Greek tribe lived in several clan villages in the valleys around some hilltops. On the hill was the place of common worship. A wall around the temple easily turned it into a citadel. In hilly Greece many of these citadels grew up close together. Very early some of the tribes combined into larger groups. Sometimes a stronger tribe would conquer the others, make them tear down their citadels and move their temples to its citadel. Taking into it the four Ionic Tribes of Attica is the way Theseus is said to have enlarged Athens. All the inhabitants continued to be free citizens of Attica and became Athenians. In Laconia, however, the other tribes were conquered and held in subjection by Sparta. The inhabitants of Laconia were never granted citizenship nor did they ask for it. They wanted to recover their independence. Lycurgus made Sparta an army to hold them down. In other territories as large as Attica and Laconia there were several independent cities. In Boeotia, for instance, there were twelve independent cities, all rivals of one another.

8

37. Athens was the chief city of
1. Attica 2. Sparta 3. Boeotia
4. Laconia 5. Lycurgus *37.* .....

38. The chief city of Laconia was
1. Athens 2. Perseus 3. Sparta
4. Boeotia 5. Lycurgus *38.* .....

39. Of what was Sparta the principal city?
1. Attica 2. Boeotia 3. the Athenians
4. Laconia 5. the Ionic tribes *39.* .....

40. What feeling did the cities of Boeotia have toward one another?
1. helpfulness 2. jealousy
3. bitterness 4. kindness 5. ridicule *40.* .....

Number Right .....

End of Reading test. Look over your work.

Elementary • GRADES 4 - 5 - 6 • form BB

California Reading Test

(Formerly: Progressive Reading Test)

DEVISED BY ERNEST W. TIEGS AND WILLIS W. CLARK

E

INSTRUCTIONS TO STUDENTS:

This is a reading test. In taking it you will show how many words you know and how well you understand what you read. No one can do the whole test correctly, but you should answer as many items as you can. Work as fast as you can without making mistakes.

DO NOT WRITE OR MARK ON THIS TEST BOOKLET UNLESS TOLD TO DO SO BY THE EXAMINER.

PUBLISHED BY CALIFORNIA TEST BUREAU — 5916 HOLLYWOOD BOULEVARD — LOS ANGELES 28, CALIFORNIA
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DIRECTIONS: If two words are the same or mean the same, mark S as you are told. If they are different or mean different things, mark D.

			Correct Test Booklet Mark	Correct Answer Sheet Mark	
				S	D
SAMPLE:	A.	dog.....dog	dog.....S.....dog	A ▌	⁞
				S	D
SAMPLE:	B.	boy.....girl	boy.....girl	B ⁞	▌

TEST 1 — SECTION A

1. run.....have
2. fire.....fire
3. mother.....mother
4. boy.....bay
5. chloride.....chloride
6. engrave.....engrave
7. distrust.....district
8. glossary.....gloomy
9. league.....league
10. shriek.....shrub
11. ponder.....poplar
12. whither.....weather
13. forceps.....forceps
14. manipulation.....manifestation
15. interpellation.....interpolation
16. WARRIOR.....WARRIOR
17. PLAINT.....PLAIT
18. PLEASANT.....PLEASANT
19. HEMORRHAGE.....HEMISPHERE
20. subterranean.....SUBTERRANEAN
21. *PINK*.....PICK
22. *THROUGH*.....thorough
23. *vaccination*.....VOCIFERATION
24. *straighten*.....*straighten*
25. miraculous.....miraculous

STOP NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. A Score (number right).....

DIRECTIONS: Look at the words which are given on the lower part of this page. Each line is numbered and each word has a smaller number, 1, 2, 3, or 4 in front of it. There are four words on each line. The examiner will pronounce one word from each line. You are to mark as you are told the number of the word that is pronounced.

PRACTICE EXERCISE

		Correct Test Booklet Mark		Correct Answer Sheet Mark (1 2 3 4)
SAMPLE:	C. 1 cow 2 horse 3 dog 4 goat In this sample the word is dog, so the 3 is marked.	3	c	C
SAMPLE:	D. 1 run 2 jump 3 throw 4 swing You are to mark the number of the word that was pronounced. It is number 4.	____	D	D

TEST 1 — SECTION B

✓ Mark as you have been told the number of the word pronounced.

26.	1 this	2 tree	3 my	4 ball	____26
27.	1 grand	2 growl	3 grunt	4 great	____27
28.	1 wrath	2 wreck	3 wrist	4 write	____28
29.	1 Tuesday	2 Wednesday	3 Thursday	4 Monday	____29
30.	1 singeing	2 moulting	3 chattering	4 singing	____30
31.	1 June	2 January	3 July	4 August	____31
32.	1 thoroughfare	2 throughout	3 through	4 thought	____32
33.	1 practice	2 precious	3 prairie	4 practical	____33
34.	1 warship	2 watch	3 wanness	4 warrant	____34
35.	1 electrocute	2 efficient	3 elimination	4 elasticity	____35
36.	1 *premium*	2 *political*	3 *public*	4 *primary*	____36
37.	1 *blizzard*	2 *blight*	3 *bluster*	4 *blotch*	____37
38.	1 *associate*	2 *acquire*	3 *avenue*	4 *arrival*	____38
39.	1 YIELD	2 YOUNG	3 YACHT	4 YAM	____39
40.	1 WHARF	2 WHISTLE	3 *wholesale*	4 *whirl*	____40
41.	1 *recipe*	2 *recital*	3 regime	4 receipt	____41
42.	1 *carnival*	2 *contagious*	3 cautious	4 cafeteria	____42
43.	1 MASSACRE	2 *menagerie*	3 *material*	4 maximum	____43
44.	1 chauffeur	2 chloroform	3 chapeau	4 charlatan	____44
45.	1 rheometer	2 pneumonia	3 rheumatics	4 pneumatics	____45

STOP NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. B Score (number right).....

DIRECTIONS: Mark as you are told the number of the word that means the opposite or about the opposite of the first word.

SAMPLE:	E. little	1 blue	2 run	3 big	4 rich	Correct Test Booklet Mark	Correct Answer Sheet Mark
						3 E	E 1 2 3 4

TEST 1 — SECTION C

46.	high	1 crooked	2 low	3 lost	4 end	____46
47.	give	1 raw	2 bill	3 stem	4 receive	____47
48.	cry	1 mind	2 laugh	3 family	4 add	____48
49.	strong	1 brook	2 that	3 weak	4 sugar	____49
50.	sweet	1 sour	2 hint	3 feature	4 swell	____50
51.	youth	1 deal	2 cause	3 age	4 arrive	____51
52.	hastily	1 hate	2 aid	3 love	4 leisurely	____52
53.	safety	1 danger	2 alarm	3 refuse	4 hate	____53
54.	attack	1 age	2 defense	3 warn	4 alarm	____54
55.	below	1 love	2 cause	3 above	4 permit	____55
56.	despair	1 grocery	2 demolish	3 orator	4 hope	____56
57.	tame	1 wild	2 repeat	3 treat	4 spot	____57
58.	solid	1 soldier	2 liquid	3 torrid	4 whistle	____58
59.	east	1 under	2 ease	3 west	4 best	____59
60.	aloud	1 bracelet	2 chirp	3 almond	4 silent	____60
61.	dainty	1 assume	2 curtain	3 dairy	4 coarse	____61
62.	inferior	1 conquest	2 invite	3 ideal	4 superior	____62
63.	peril	1 safety	2 mental	3 remote	4 purse	____63
64.	victor	1 statue	2 loser	3 treaty	4 wallet	____64
65.	sad	1 mood	2 vocal	3 glad	4 sap	____65
66.	unseen	1 notice	2 valor	3 unsteady	4 visible	____66
67.	traitor	1 friend	2 weasel	3 young	4 tragic	____67
68.	expensive	1 infect	2 excel	3 cheap	4 experiment	____68

STOP NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. C Score (number right).....

DIRECTIONS: Mark as you are told the number of the word that means the same or about the same as the first word.

						Correct Test Booklet Mark		Correct Answer Sheet Mark 1	2	3	4
SAMPLE:	F. large	1 pretty	2 run	3 big	4 rich	3	F	F			

TEST 1 — SECTION D

69.	enemy	1 thicken	2 weigh	3 foe	4 subdue	____69
70.	promise	1 compact	2 pure	3 neutral	4 lovely	____70
71.	lie	1 amateur	2 falsehood	3 denial	4 casual	____71
72.	trade	1 merchant	2 vein	3 exchange	4 ideal	____72
73.	hard	1 deed	2 hint	3 feature	4 solid	____73
74.	wit	1 hail	2 fear	3 humor	4 ink	____74
75.	calm	1 stucco	2 token	3 vanity	4 quiet	____75
76.	industry	1 business	2 infantry	3 repent	4 outbreak	____76
77.	consent	1 love	2 permission	3 alarm	4 cause	____77
78.	speech	1 defend	2 feast	3 talk	4 cure	____78
79.	prophet	1 mangle	2 obstruct	3 pleasant	4 forecaster	____79
80.	settlement	1 location	2 innocent	3 silent	4 wise	____80
81.	hush	1 keen	2 quiet	3 mood	4 hurl	____81
82.	freight	1 allow	2 easy	3 hurl	4 cargo	____82
83.	physician	1 doctor	2 enemy	3 leisure	4 ugly	____83
84.	magnificent	1 purchase	2 magician	3 impressive	4 stationary	____84
85.	abolish	1 ocean	2 cry	3 destroy	4 high	____85
86.	plenty	1 wonder	2 stem	3 friend	4 sufficient	____86
87.	tray	1 container	2 land	3 brook	4 expect	____87
88.	amuse	1 fertile	2 entertain	3 doubt	4 amount	____88
89.	hatred	1 haul	2 nurse	3 pedal	4 enmity	____89
90.	lecture	1 pulpit	2 rigor	3 sermon	4 ledge	____90

STOP NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. D Score (number right).....

DIRECTIONS: Read the following directions. Mark as you are told the number or letter of each correct answer.

TEST 2 — SECTION E

91. By crossing out two letters you can make **count** out of the word, **country.** Mark the number of the two letters which would be crossed out.

[1] ry [2] ct [3] nu [4] cy ____91

92. Find the name of the largest animal and mark its number.

[1] dog [2] rat [3] cow [4] sheep ____92

93. Some of the Roman numerals and their values are:

IX=9 XIX=19
XX=20 XXI=21

Mark the letter of the Roman numeral for 20.

[a] XIX [b] XX [c] IX [d] XXI ____93

94. Mark the number of the seventh word in this sentence.

[1] third [2] word [3] the [4] in ____94

95. Mark the letter which must be added to **hors** to make **horse.**

i a s e ____95

96. Mark the sixth letter of the last word in this sentence.

e a n r t ____96

97. Read the following names:

Marie Arthur Richard Mary

Mark the number which shows the first letter of the girls' names.

[1] A [2] M [3] R ____97

98. Read these numbers:

6 3 4 8 5 2 1 9 0

Mark the letter of the third number to the right of 8.

[a] 1 [b] 9 [c] 6 [d] 3 ____98

99. When two words are spoken as one, the shortened form is a contraction. The apostrophe denotes the missing letter; such as **can not, can't.** Mark the number of the word meaning **do not** in the form of a contraction.

[1] can't [2] do not
[3] doesn't [4] don't ____99

100. The suffix *ness* is used to form nouns meaning state or quality of being; such as sick, sickness. Mark the number of the word which has the suffix *ness* added to the word, white.

[1] sickness [2] ness
[3] whiteness [4] white ____100

STOP NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. E Score
(number right) .....

DIRECTIONS: Read the following directions. Mark as you are told the number or letter of each correct answer.

TEST 2 — SECTION F

101. The preface is found in what part of a book?

[1] beginning [2] middle [3] end ____101

102. The index is found in what part of a book?

[1] beginning [2] middle [3] end ____102

✓ **Read this list of words:**

yard	pail
jar	bird
help	king
quiet	ripe

If the above words were arranged alphabetically,

103. **help** would come next after

[1] bird [2] king [3] yard ____103

104. **pail** would come next after

[1] quiet [2] jar [3] king ____104

✓ **Look at the following and find the answers to items 105, 106, and 107.**

Table of Contents

105. Mark the letter of the page which shows where "Transportation" begins.

[a] 1 [b] 19 [c] 43 [d] 50 ____105

106. Mark the number which shows what story begins on page 88.

[1] Poultry and Eggs
[2] Communication
[3] Transportation ____106

107. Mark the number which shows to which chapter the material on page 38 belongs.

1 2 3 4 5 ____107

✓ **Look at this partial index and find the answers to items 108, 109, and 110.**

INDEX

108. Mark the letter which shows on what page information about the Ohio River will be found.

[a] 8 [b] 134 [c] 7 [d] 337 ____108

109. Mark the letter which shows on what page information concerning oil in Rumania will be found.

[a] 383 [b] 400 [c] 329 [d] 331 ____109

110. Mark the letter which shows on what page information concerning the physical features of Oklahoma will be found.

[a] 141 [b] 147 [c] 157 [d] 135 ____110

STOP NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. F Score (number right) .....

TEST 2 — SECTION G

✓ **Read this story:**

Camels live most of the time on the desert. They have padded feet, nostrils that can be closed in a storm, and thick bushy eyebrows and lashes which protect their eyes. Their stomachs and humps are made up of cells which store their water and food for future use on their long journeys through the desert wastes. They are the principal means of transportation on the Sahara Desert.

✓ **Mark as you have been told the number of each correct answer. You may look back to find the answers.**

111. The best title for the above story is
   1 Domestic Animals
   2 The Camel 3 The Desert ——111

112. Camels are useful
   1 in large cities 2 as food
   3 in transportation ——112

113. The stomach and hump are made up of
   1 fur 2 cells 3 pads ——113

114. The camel eats
   1 irregularly 2 regularly
   3 rarely ——114

115. The camel is
   1 wild 2 useless 3 useful ——115

116. His home is in the
   1 desert 2 jungles 3 mountains ——116

GO RIGHT ON TO THE NEXT STORY

✓ **Read this story:**

One of the large countries in North America is Canada.

Canada has an irregular coast line with many fine harbors. It is lacking in large ports because of the ice-bound harbors in the winter, and this is a serious handicap to the development of trade. During the warm summer season, important agricultural products are grown.

Canada is rich in natural resources, but the population is still small. There are vast areas of valuable forests; the many fur-bearing animals are a source of great revenue, and the streams have unlimited possibilities for the development of power.

✓ **Mark the number of each correct answer. You may look back to find the answers.**

117. The above story is about
   1 North America 2 Canada
   3 large countries ——117

118. They have
   1 few natural resources
   2 many large ports
   3 fine harbors ——118

119. A serious handicap is
   1 over-production
   2 ice-bound harbors
   3 a lack of streams ——119

120. The climate of Canada is
   1 changeable 2 very dry
   3 equatorial ——120

121. Choose the best statement:
   1 Canada has few natural resources
   2 The cotton is profitable in Canada
   3 Canada has many unsettled areas ——121

GO RIGHT ON TO THE NEXT PAGE

✓ **Read this story:**

The Telephone

The telephone is a device for transmitting speech by means of electricity. The first patent for this instrument was granted to Alexander Graham Bell on March 7, 1876.

Since the original invention there have been many improvements in the mechanical features of telephones. Submarine cables have been laid across the ocean to permit communication between countries, and many overhead wires have been removed by running the wires through conduits under ground. As a result of a large amount of experimentation, we can now communicate by wireless telephone.

The principal achievement of the telephone is that of abridging space. By this means of communication, business transactions and conversations are more quickly completed and trade and commerce have been greatly stimulated. Thus we see that telephones have been a definite aid in the progress of our nation.

✓ **Mark the number of each correct answer. You may look back to find the answers.**

122. Alexander Graham Bell was

[1] an artist [2] an inventor
[3] a navigator [4] a naturalist ____122

123. Conduits have been used to remove

[1] submarine cables [2] commerce
[3] overhead wires
[4] business transactions ____123

✓ **Read the six titles below. You are to select the one that would make the best title for each of the three paragraphs of the story.**

Titles

1. March 7, 1876
2. Invention of the Telephone
3. Improvements and Developments
4. Mechanical Features
5. Effects of the Invention
6. Trade and Commerce

124. The best title for the first paragraph is number

1 2 3 4 5 ____124

125. The best title for the second paragraph is number

2 3 4 5 6 ____125

126. The best title for the third paragraph is number

2 3 4 5 6 ____126

The following things are mentioned in the story:

Removing overhead wires
Granting the patent
Wireless telephone
Improving the telephone

The order in which the above things were mentioned in the story is as follows:

127. Improving the telephone was

1st 2nd 3rd 4th ____127

128. Removing overhead wires was

1st 2nd 3rd 4th ____128

129. Wireless telephone was

1st 2nd 3rd 4th ____129

130. Granting the patent was

1st 2nd 3rd 4th ____130

STOP NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. G Score (number right).....

California Reading Test elementary form BB

GRADES 4 - 5 - 6

DEVISED BY ERNEST W. TIEGS AND WILLIS W. CLARK

Name ..... (Last / First / Middle) Occupation or Grade ..... (CIRCLE ONE) Boy .. Girl

School or Organization ..... City ..... Date of Test ..... (Month / Day / Year)

Examiner ..... (.....) Pupil's Age ..... Date of Birth ..... (Month / Day / Year)

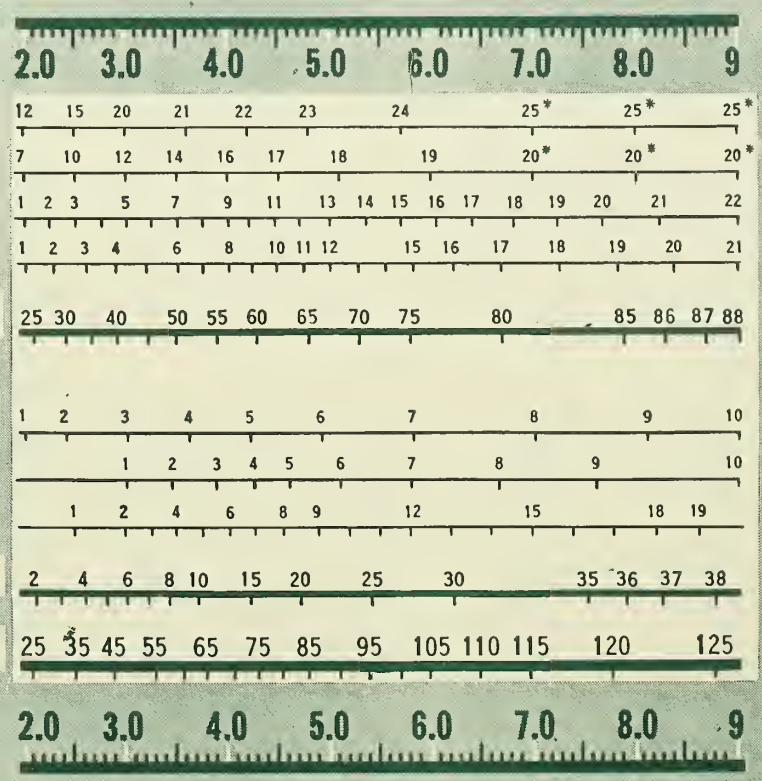
TEST	SECTION	POSSIBLE SCORE	PUPIL'S SCORE
1. READING VOCABULARY	A. Word Form	25	
	B. Word Recognition	20	
	C. Meaning of Opposites	23	
	D. Meaning of Similarities	22	
	TOTAL (A+B+C+D)	90	
2. READING COMPREHENSION	E. Following Directions	10	
	F. Reference Skills	10	
	G. Interpretations	20	
	TOTAL (E+F+G)	40	
	TOTAL READING	130	

Grade Placement

Percentile Rank

DIAGNOSTIC PROFILE (Chart Pupil's Scores Here)

Grade Placement



DIAGNOSTIC ANALYSIS OF LEARNING DIFFICULTIES

1. Reading Vocabulary

A. WORD FORM:

- 1-15 - - - - - - - Lower case words
- 16, 17, 18, 19 - - - - - - Capitals
- 20, 21, 22, 23, 24, 25 - - - - Miscell. type faces

B. WORD RECOGNITION:

- 26, 29, 31 - - - - Gross differences
- 27, 28, 30, 32 - 45 - - - - Initial sounds or endings

C. OPPOSITES:

- 46-68 - - - - - - - Basic vocabulary

D. SIMILARITIES:

- 69-90 - - - - - - - Basic vocabulary

2. Reading Comprehension

E. FOLLOWING SPECIFIC DIRECTIONS:

- 91, 95 - - - - - - - Simple directions
- 92, 93, 94, 96, 97, 98 - - - - Direct., simple choice
- 99, 100 - - - - - - Defin. and direct.

F. REFERENCE SKILLS:

- 101, 102 - - - - - Parts of book
- 103, 104 - - - - - Alphabetizing
- 105, 106, 107 - - - Table of contents
- 108, 109, 110 - - - Use of index

G. INTERPRETATION OF MEANINGS:

- 111, 117 - - - - - Topic or central idea
- 112, 113, 118, 119, 122, 123 - - Directly stated facts
- 114, 115, 116, 120, 121 - - Making inferences
- 124, 125, 126 - - - Organ. of topics
- 127, 128, 129, 130 - - - - - Sequence of events

See MANUAL for instructions on preparation of Diagnostic Profile and Diagnostic Analysis of Learning Difficulties.

*When maximum scores are achieved, plot the score which most nearly conforms to Total Reading Grade Placement.

PUBLISHED BY CALIFORNIA TEST BUREAU — 5916 HOLLYWOOD BOULEVARD — LOS ANGELES 28, CALIFORNIA

Edmonton Social Studies Tests

Part 1 **SOCIAL STUDIES** Elem. Form A

People Around the World, Our Canadian Heritage

Developed under the chairmanship of Mr N.H. Cuthbertson

To Pupils: Do not start until your teacher tells you what to do.

NAME OF PUPIL _____ DATE _____

SCHOOL _____ GRADE _____

DIRECTIONS: The answers to all questions must be placed in the spaces at the right. There are two types of questions on this test; first are true and false questions.

e.g. Edmonton is the capital of Alberta. ___T___
Jasper Park is east of Edmonton. ___F___

The second type of question is called multiple choice because there are several answers to choose from. You must write the number of the best answer on the space provided at the right.

e.g. There are (a) six (b) four (c) two (d) three types of questions on this test. ___(c)___

The correct answer is two, so 'c' is placed on the line. Be careful to notice which type of question each test uses.

PART I PEOPLE AROUND THE WORLD

A. PEOPLE OF OTHER TIMES

Directions: Read each statement below. If the statement is TRUE, write 'T' in the space provided; if it is FALSE, write in the letter 'F'.

1. The discovery of fire enabled the early man to make better weapons. _____
2. Until the last two or three hundred years China has been an uncivilized country. _____
3. In the Middle Ages books were so valuable that they were often chained to the reading desks. _____
4. Greece was the first country in which the people had a real voice in the government. _____
5. The civilization of Rome was influenced very little by those of other peoples. _____
6. In the Middle Ages, each serf owned a small farm. _____
7. One of the chief contributions of the Hebrews to civilization was a belief in one God. _____
8. The Romans ruled well the lands they conquered. _____
9. During the Middle Ages a serf could, by hard work and study, become a knight of the court. _____
10. The annual flooding of the Nile helped the Egyptians to become very good in mathematics. _____

Directions: For each of the following questions several answers are given. Choose the ONE answer you think is correct, then fill in the space at the right with the letter of the answer you chose.

11. Which of the following is the main reason why early man was able to survive and gradually gain control of his world?
    (a) He invented and used many weapons and tools.
    (b) He was stronger than most of the animals.
    (c) He was able to adapt himself to different climates and make use of natural resources.
    (d) He domesticated many wild animals to his use. _____

12. Which one of the following products was used in China long before it was known of in the rest of the world?
    (a) chariots (b) gunpowder (c) salt (d) fishing nets _____

13. Which one of the statements given below helps to explain why an early civilization developed in Egypt?
    (a) The Egyptians had learned the arts and sciences of the Romans.
    (b) The Egyptians adopted the culture of the Greeks.
    (c) The Nile River made the land fertile and provided water for irrigation.
    (d) Egypt had many small mountain valleys. _____

14. Which one of the following statements is true of people who lived during the Middle Ages?
    (a) Depended on the nobles for protection.
    (b) Printed many books.
    (c) Had public schools.
    (d) Developed trade with North America. _____

15. Before the invention of the printing press, most of the books of Europe were prepared by:
    (a) typesetters (b) monks (c) typists (d) serfs _____

16. The monks of the Middle Ages performed many valuable services. Which one of the following did they perform?
    (a) Cared for the ill, for orphans, and for travelers.
    (b) Built beautiful temples.
    (c) Developed trade with the Far East.
    (d) Helped to spread Christianity throughout the New World. _____

17. Which one of the following was among the chief contributions of the Romans?
    (a) Made many wise laws.
    (b) Developed the first alphabet.
    (c) Developed the first calendar.
    (d) Invented the compass. _____

18. One of the first Europeans to visit China and India was:
    (a) Balboa (b) Cortez (c) Marco Polo (d) Columbus _____

19. Which one of the following peoples built fine roads and aqueducts?
    (a) Egyptians (b) Romans (c) Chinese (d) Hebrews _____

20. Which of the following reasons helped most to bring about the discovery of America and other unknown parts of the world?
    (a) Desire for more land.
    (b) Desire to gain the wealth of the Orient.
    (c) Desire for adventure.
    (d) Desire to prove the world was round. _____

B. PEOPLE OF OTHER PLACES

Directions. Read each statement below. If the statement is TRUE, you are to mark the letter 'T'; if it is FALSE, mark the letter 'F'

1. Thousands of Chinese families live on sampans or houseboats. _____

2. Practically all the people of Brazil are of the white race. _____

3. Much of the farm land in Holland has been reclaimed from the sea. _____

4. The average farm in China is larger than the average farm in Canada. _____

5. Several of the countries of South America are so mountainous that transportation is very difficult. _____

6. People who live in the northern part of Sweden and Norway have several weeks of continuous daylight each summer. _____

7. Most of the farms in Central America are large plantations owned by people from Europe or the United States. _____

8. The population of the various deserts in the world is large _____

9. In form of government, United States is known as a republic. _____

10. All of the people of United States came from English speaking countries. _____

11. Our laws, customs, and language in Canada have their beginnings in the British Isles. _____

12. The people of India have a high standard of living. _____

13. Variations in altitude and its location permit Mexico to grow every type of plant found from the Arctic circle to the equator. _____

14. The people of Switzerland have no national language. _____

15. The world's jungle communities are all near the equator. _____

Directions: For each of the following questions, several answers are given. Choose the ONE answer you think is correct, then fill in the space at the right with the letter of the answer you chose.

16. Which one of the following countries is called a Scandinavian country?
    (a) England (b) Spain (c) France (d) Norway _____

17. For which one of the following reasons do the people of Japan terrace much of their farming land?
    (a) Terracing makes it possible for them to raise crops on hillsides.
    (b) Terracing makes the farms more beautiful.
    (c) Rice can be grown only on terraces.
    (d) Farm machinery can be used on terraces. _____

18. One of the favorite foods of the Mexican people is a thin cake made of cornmeal. It is called:
    (a) corn pone (b) tortilla (c) hacienda (d) estancia _____

19. Switzerland has become famous for its manufacturing of:
    (a) silk (b) perfumes (c) watches (d) woolen cloth _____

20. Which one of the following is a true statement about Argentina?
    (a) Men work in the tin and silver mines.
    (b) Gauchos herd cattle over the wide plains.
    (c) Farm lands are terraced.
    (d) Jungle growth makes farming difficult. _____

21. The law-making body of England is known as:
    (a) Congress (b) Assembly (c) Parliament (d) House of Delegates _____

22. Which one of the following would help most in preventing famines in India?
    (a) Planting more rice.
    (b) Bringing in more men to work on the farms.
    (c) Using improved methods of farming.
    (d) Improving and extending roads and railroads. _____

23. The capital of United States is located in:
    (a) Ottawa (b) Washington (c) New York (d) Chicago _____

24. Which one of the following is a true statement about the Andes region of South America?
    (a) There are many large ranches.
    (b) Men work in the tin and silver mines.
    (c) There are many large cities.
    (d) Jungle growth makes farming difficult. _____

25. The region in United States most noted for manufacturing is:
    (a) Eastern United States
    (b) Southern United States
    (c) Central United States
    (d) The Mountain States _____

26. Which of the following animals is not native to Australia?
    (a) Platypus (b) Llama (c) Koala bear (d) Dingo _____

27. Which of the following ancient civilizations flourished in Peru?
    (a) Mayas (b) Aztecs (c) Incas (d) Mound Builders _____

28. In which of the following countries is the most farm machinery used?
    (a) Canada (b) United States (c) India (d) Russia _____

29. In which of the following regions are there large numbers of negroes?
    (a) India (b) Brazil (c) South Africa (d) Australia _____

30. Which one of the following is a true statement about the British Commonwealth of Nations:
    (a) Includes only people who talk English.
    (b) Includes no land in North or South America.
    (c) Has one great army and navy.
    (d) Each member nation is independent. _____

C. UNDERSTANDING DEMOCRACY

Directions: Read each statement below. If the statement is TRUE, write the letter 'T' in the space provided; if it is FALSE, write in the letter 'F'.

1. We have freedom of speech in Canada. _____
2. In committee work everyone should agree with the chairman. _____
3. We are governed by local, provincial and federal governments. _____
4. Only people born in Canada may become citizens of this country. _____
5. Any citizen may criticize the government of Canada. _____
6. We hold elections to find out whether or not the majority of voters are satisfied with those who are governing us. _____
7. By freedom of speech, we mean that everyone may express his ideas without fear of punishment for them. (for doing so) _____
8. The Governor General of Canada has the power to make laws. _____
9. When the majority of the pupils in your class vote for a rule that you do not agree with, it should be your right to break this rule. _____
10. The Prime Minister of Canada can make laws without the consent of Parliament. _____
11. No one knows how a Canadian votes unless he chooses to tell. _____
12. The Dominion Government can overrule any act passed by the Provincial Governments. _____
13. Our law courts are designed to protect all our people from unjust treatment. _____
14. Group leaders should always be appointed by the teacher. _____
15. The chief responsibility of our police is to protect us. _____
16. Laws are made for the benefit of all citizens. _____
17. The Dominion Government raises money to carry on its work by means of taxes. _____
18. A good citizen will criticize a law which he thinks is wrong and try to have it changed. _____
19. It is the responsibility of every citizen to vote in an election. _____
20. The best way for a citizen to protest against some action of the government is to refuse to pay his taxes. _____

PART II CANADIAN HERITAGE

A. EXPLORATION AND COLONIZATION

Directions: For each of the following questions, several answers are given. Choose the ONE answer you think is correct, then fill in the space at the right with the letter of the answer you chose.

1. Christopher Columbus set out to find:
   (a) A new route to America.
   (b) Cuba.
   (c) The North West Passage.
   (d) India.
   (e) North America. _____

2. The first explorer to sail up the St. Lawrence River was:
   (a) Champlain (b) Wolfe (c) La Verendrye (d) Hudson
   (e) Cartier _____

3. Which of the following factors helped most to bring about the discovery of America?
   (a) Desire for more land.
   (b) Desire to gain the wealth of the Orient.
   (c) Desire to begin the fur trade.
   (d) Desire for adventure.
   (e) Desire to find a new continent. _____

4. About 300 years ago a ship could cross the Atlantic in:
   (a) A few days.
   (b) About a year.
   (c) A week.
   (d) About two months.
   (e) Two days. _____

5. Men often became sick from scurvy on board sailing ships because:
   (a) They were superstitious.
   (b) They did not wear proper clothing.
   (c) They ate spoiled fish.
   (d) They did not get any fresh food.
   (e) They had no place to sleep. _____

6. Most people agree that the first explorers to reach North America were?
   (a) Spanish (b) French (c) Norsemen (d) Dutch (e) Indians _____

7. Most earlier explorers were trying to:
   (a) Convert heathens.
   (b) Prove the world was round.
   (c) Find new products.
   (d) Capture slaves.
   (e) Discover a route to the East. _____

8. In 1608, Samuel de Champlain founded a colony at:
   (a) Port Royal (b) Quebec (c) Montgomery (d) Belle Isle
   (e) Halifax. _____

9. La Verendrye was a fur trader interested in exploration. His main concern was the search for:
   (a) More beaver pelts.
   (b) A lost tribe of Indians.
   (c) A highway to Montreal.
   (d) The source of the Red River.
   (e) The Western Sea. _____

10. The explorations of Champlain centered chiefly around:
    (a) Newfoundland.
    (b) The Red River.
    (c) Lake Ontario.
    (d) Lake Michigan.
    (e) Hudson's Bay. _____

11. The French name for the land we call the Maritime Provinces was:
    (a) Acadia (b) Canada (c) Quebec (d) Port Royal _____

12. Radisson and Groseilliers received help for their fur trading expeditions from:
    (a) The governor of New France.
    (b) The king of France.
    (c) The merchants of Boston.
    (d) The merchants of London. _____

13. Wolfe captured Canada for England in 1759 by defeating:
    (a) Montcalm (b) Laval (c) Maisonneuve (d) Frontenac _____

14. The French settlers were called:
    (a) farmers (b) colonists (c) habitants (d) coureurs-de-bois _____

15. The United Empire Loyalists were colonists who came to Canada from:
    (a) the United States (b) England (c) France (d) Acadia _____

16. The largest number of United Empire Loyalists settled in what is now:
    (a) Nova Scotia..
    (b) British Columbia.
    (c) Quebec.
    (d) Ontario. _____

17. Which one of these provinces was not one of the first four to join the Dominion?
    (a) Ontario.
    (b) Quebec.
    (c) Prince Edward Island.
    (d) New Brunswick.
    (e) Nova Scotia _____

18. The men who joined the Indians in the fur trade were called:
    (a) Rangers.
    (b) Trappers.
    (c) Seigniors.
    (d) Habitants.
    (e) Coureurs-de-bois. _____

19. Listed below are four inventions. Which could have been owned by a person living in Eastern Canada 200 years ago?
    (a) Gasoline engine.
    (b) Spinning wheel.
    (c) Cotton gin.
    (d) Sewing machine. _____

20. The chief way in which the English colonists in America made their living was by:
    (a) Farming.
    (b) Fur trading.
    (c) Fishing.
    (d) Prospecting for gold. _____

B. WESTWARD MOVEMENT

Directions: Read each statement below. If the statement is TRUE, write the letter 'T' in the space provided; if it is FALSE, write in the letter 'F'.

1. The North Saskatchewan River was an important route for fur traders. _____
2. The Selkirk Settlers came to Western Canada by way of Montreal. _____
3. Grasshoppers often destroyed the crops of the Selkirk Settlers. _____
4. The North West Company did not want settlers to come to Western Canada. _____
5. In 1821 the North West Company and the Hudson's Bay Company united to fight the Indians. _____
6. When the Dominion of Canada was formed, the government had to buy the land of Western Canada from the Hudson's Bay Company. _____
7. After the Canadian Pacific Railway was built many settlers came to the prairies. _____
8. The Royal North West Mounted Police were formed to protect settlers from the Indians. _____
9. Missionary Evans reduced the Cree language to writing. _____
10. Missionaries Father Lacombe and George MacDougal prevented the Cree Indians from joining in the Saskatchewan Rebellion. _____
11. Alberta became a province before Saskatchewan. _____
12. Early settlers on the prairies often built the walls of their houses out of sod. _____
13. Prince Edward Island became a province of Canada after British Columbia joined confederation. _____
14. The cities of Vancouver and Calgary both had their beginnings as fur trading posts. _____
15. After 1870 many half-breeds moved from Manitoba to the valley of the North Saskatchewan River. _____

C. OUR PROVINCE AND OUR COMMUNITY

Directions: For each of the following questions, several answers are given. Choose the ONE answer you think is correct, then fill in the space at the right with the letter of the answer you chose.

1. Alberta's population is about:
   (a) 100,000 (b) 10,000,000 (c) 200,000 (d) 50,000
   (e) 1,000,000 _____
2. Alberta has been a province for about:
   (a) 500 years (b) 75 years (c) 55 years (d) 150 years
   (e) 25 years _____
3. The Trans-Canada Highway goes through:
   (a) Lethbridge (b) Calgary (c) Red Deer (d) Edmonton
   (e) Peace River _____

4. Which one of these factories cannot be found in or near Edmonton?
   (a) Sugar refinery.
   (b) Meat packing plant.
   (c) Chemical plant.
   (d) Oil refinery.
   (e) Box factory. _____

5. The most important product of the Peace River District is:
   (a) wheat (b) oil (c) lumber (d) coal (e) fish _____

6. Which of these rivers is used to produce electricity by water power?
   (a) North Saskatchewan (b) Peace (c) Athabasca (d) Red Deer
   (e) Bow _____

7. Edmonton gets its electricity from a power plant owned by:
   (a) A private company.
   (b) A rich man.
   (c) The Government of Alberta.
   (d) The City of Edmonton.
   (e) The C. N. R. _____

8. The political party which is in power in Alberta is:
   (a) Liberal (b) Social Credit (c) Conservative (d) C.C.F.
   (e) Citizens Committee _____

9. Most of Alberta's factories get their raw products from:
   (a) oil wells (b) coal mines (c) farms (d) forests
   (e) towns _____

10. Most of the goods coming into Alberta arrive by:
    (a) train (b) airplane (c) boat (d) truck (e) car _____

11. The capital city of Alberta is:
    (a) Ottawa (b) Banff (c) Red Deer (d) Calgary (e) Edmonton _____

12. Sugar beets are grown near:
    (a) Edmonton (b) Calgary (c) Lethbridge (d) Peace River
    (e) Drumheller _____

13. Alberta's chief industry is:
    (a) mining (b) lumbering (c) oil refining (d) farming
    (e) fishing _____

14. The grain growing season in Alberta is about:
    (a) Three months long.
    (b) Six months.
    (c) Three weeks.
    (d) Sixty days.
    (e) Nine months. _____

15. Which of these minerals is not mined in Alberta:
    (a) oil (b) coal (c) iron (d) salt (e) gypsum _____

16. The population of Edmonton is about:
    (a) 2,700 (b) 27,000 (c) 270,000 (d) 2,700,000 (e) 27,000,000
    _____

17. In Alberta lumber mills may be found:
    (a) West of Edmonton.
    (b) Near Medicine Hat.
    (c) On the prairie.
    (d) In Eastern Alberta.
    (e) At Drumheller. _____

18. Alberta's largest producing oil fields are near:
    (a) Calgary (b) Edmonton (c) Vermilion (d) McMurray
    (e) Lloydminster _____

19. The University of Alberta is located in:
    (a) Lethbridge (b) Banff (c) Red Deer (d) Edmonton
    (e) Wetaskiwin

20. Alberta's best known tourist resort is at:
    (a) Jasper (b) Wabumum (c) Elk Island (d) Banff
    (e) Sylvan Lake

D. OUR COUNTRY

Directions: For each of the following questions, several answers are given. Choose the ONE answer you think is correct, then fill in the space at the right with the letter of the answer you chose.

1. In Canada today most of the people live:
    (a) Near the west coast.
    (b) On the prairies.
    (c) In the northern part.
    (d) Along the southern border.
    (e) In the Maritimes.

2. We do not grow cotton in Canada because:
    (a) It is too dry.
    (b) We have no cotton factories.
    (c) It is too cold.
    (d) We don't know how to grow it.
    (e) We don't need cotton.

3. In some places in Canada irrigation is used because:
    (a) The land is too wet.
    (b) We have to grow sugar beets.
    (c) The climate is too cold.
    (d) It does not rain much.
    (e) The soil is poor.

4. The Great Lakes are most important to Canada because:
    (a) They provide water for irrigation.
    (b) Most of Canada's fish come from them.
    (c) They separate Canada from the United States.
    (d) They provide drinking water for large cities.
    (e) They provide 1,000 miles of cheap water transportation.

5. The greatest wheat producing province in Canada is:
    (a) Saskatchewan (b) Quebec (c) British Columbia
    (d) Manitoba (e) Ontario

6. If you were bringing radium from Great Bear Lake, you would likely use:
    (a) the C.P.R. (b) a canoe (c) the C.N.R. (d) an airplane
    (e) a large ship

7. Which of the following kinds of factories is Alberta most noted for?
    (a) Paper mills.
    (b) Fish canning plants.
    (c) Meat packing plants.
    (d) Steel mills.
    (e) Automobile factories.

8. Douglas Fir is a leading source of lumber in:
    (a) New Brunswick (b) Quebec (c) Ontario (d) Alberta
    (e) British Columbia

9. The country to which Canada sells the most goods is:
   (a) Holland (b) England (c) China (d) Mexico (e) France _____

10. Canada is regarded as a rich country because:
   (a) Some people have lots of money.
   (b) The Government is wealthy.
   (c) Canada has many debts.
   (d) There are so many people in the country.
   (e) Canada has great natural resources. _____

11. Irrigated farm lands may be found:
   (a) Along the Pacific Coast of Canada.
   (b) In Ontario.
   (c) On the prairies.
   (d) Along the Hudson Bay.
   (e) In the Maritimes. _____

12. In which one of these provinces do the greatest number of people make a living working in factories?
   (a) Newfoundland (b) Quebec (c) Alberta (d) Nova Scotia
   (e) Manitoba _____

13. Oil is transportated from Western Canada to Ontario chiefly by:
   (a) pipeline (b) railroads (c) trucks (d) tankers
   (e) airplanes _____

14. Metals are mined chiefly in:
   (a) New Brunswick (b) Ontario (c) Saskatchewan (d) Yukon
   (e) Alberta _____

15. The Premier of Canada is:
   (a) Mr. Pearson (b) Mr. Manning (c) Mr. Diefenbaker
   (d) Mr. Vanier (e) Mr. Kennedy _____

16. The province with the largest population is:
   (a) British Columbia (b) Nova Scotia (c) Manitoba
   (d) Alberta (e) Ontario _____

17. Canada buys more goods from: ---
   (a) United States (b) Mexico (c) England (d) France
   (e) Germany (f) Russia --- than from any other country. _____

18. The climate of British Columbia, Southern Ontario and Nova Scotia is suitable for growing apples because:
   (a) The soil is good.
   (b) These districts are warmer.
   (c) They have lots of rain.
   (d) They are beside the ocean.
   (e) The frosts come earlier. _____

19. Canada is governed by:
   (a) The Queen.
   (b) One man.
   (c) The Senate.
   (d) England.
   (e) People who are elected. _____

20. Transporting goods across Canada is very expensive because:
   (a) We have so few people.
   (b) The railroads are old.
   (c) We have no canals.
   (d) Distances are so great.
   (e) There is only one railroad. _____

21. Which of the following products does Canada have largest amounts for sale to other countries?
    (a) paper (b) oil (c) coal (d) iron (e) milk _____

22. The largest city in Canada is:
    (a) Ottawa.
    (b) Montreal.
    (c) Edmonton.
    (d) Vancouver.
    (e) St. John. _____

23. Automobiles are manufactured in:
    (a) Ontario.
    (b) Nova Scotia.
    (c) Manitoba.
    (d) Alberta.
    (e) Newfoundland. _____

24. Canada has a large iron mine in:
    (a) Saskatchewan.
    (b) Southern Ontario.
    (c) Yukon.
    (d) Northern Quebec.
    (e) Prince Edward Island. _____

25. Fish canning is an important industry in:
    (a) Ontario.
    (b) Alberta.
    (c) British Columbia.
    (d) Manitoba.
    (e) Toronto. _____

26. The distance across Canada is about:
    (a) 300 miles.
    (b) 3,000 miles.
    (c) 30,000 miles.
    (d) 300,000 miles. _____

27. Compared with other countries her size, Canada has a: ---
    (a) small
    (b) large
    (c) medium sized
    (d) very large --- population. _____

28. About:---
    (a) 1/2 (b) 3/4 (c) 2/3 (d) 1/4 --- of the people of Canada are French speaking. _____

29. Which of these cities is farthest north?
    (a) Montreal.
    (b) Toronto.
    (c) Windsor.
    (d) Hamilton.

30. Canada's population is about:
    (a) 18,000 (b) 180,000 (c) 1,800,000 (d) 18,000,000 _____